APRIL 10, 1961

PURCHASING

The Methods and News Magazine for Industrial Buyers

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A CONOVER-MAST PUBLICATION
SEVENTY-FIVE CENTS

This mark tells you a product is made of modern, dependable Steel.



How they built a better penstock with half the steel

Near Chinaman's Peak in the Canadian Rockies, Calgary Power, Ltd., has completed the first penstock in this hemisphere built with USS "T-1" Steel. The 1,601-foot-long, 8′ diameter penstock is part of their "Spray No. 2 Project" to produce 50,000 more KW of hydroelectric power for Calgary Power in Alberta, Canada.

Montreal Engineering Co., Ltd., designers of the project, recognized the value of USS "T-1" Steel as an excellent constructional alloy steel for high head penstocks several years ago. After careful study, their engineers specified USS "T-1" Steel for the job because its minimum yield strength of 100,000 psi made possible nearly a 50% savings in the amount of steel required. This saving helped to reduce substantially the transportation and erection costs that would have been required had structural carbon steel been used in this location.

It was significant that the penstock was designed to a 37,000 psi unit working stress (or approximately 41,000 psi unit stress at 90% joint efficiency). This is more than 28% greater than the ASME code case 1204-4 allows for pressure vessels built of "T-1" Steel in United States.

In the new Calgary penstock, 500 tons of USS "T-1" Steel plate 5/16" to 3/4" thick were used by Dominion Bridge to fabricate the segments, or "cans," in its Calgary plant. These segments are 8′ to 7′ in diameter. Field welding was reduced and lighter foundations were possible.

Other applications. Because of USS "T-1" Steel's exceptional strength, toughness, and high resistance to impact abrasion, it is widely used to build equipment stronger and brawnier but lighter in weight. USS "T-1" Steel is readily weldable, does not require stress relieving and retains its strength even at very low temperatures. Write for a free copy of our book, "The Fabrication and Design of Structures of 'T-1' Steel." United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania. *USS and "T-1" are registered trademarks*

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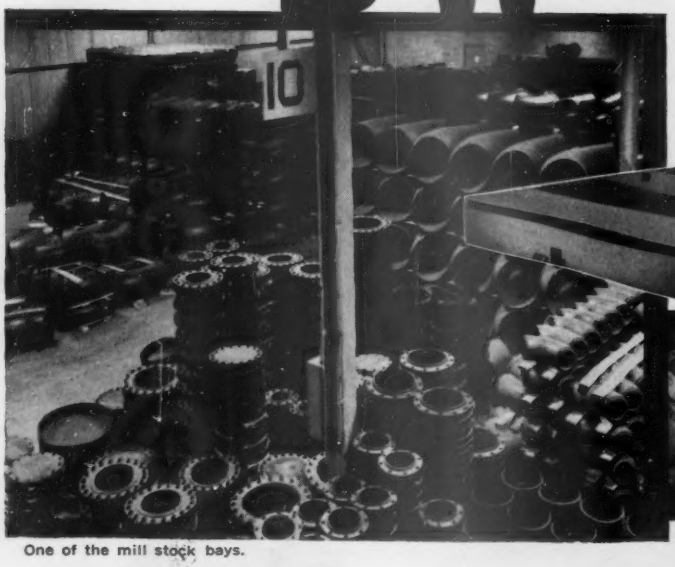
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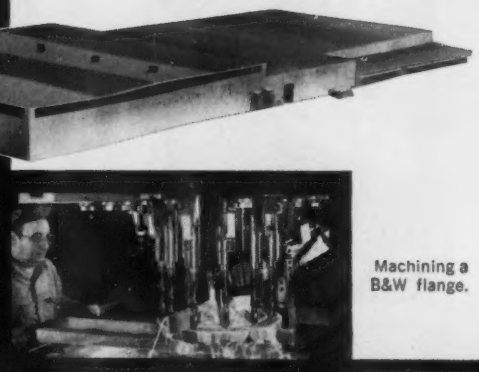
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The Source for Better Service . . . a Better Product

B&W's New Fittings Plant is in FULL OPERATION



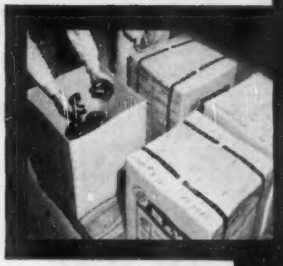
One of the mill stock bays.



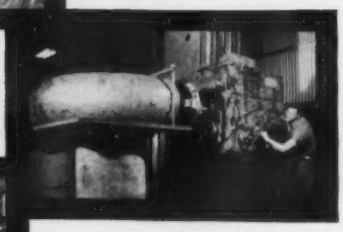
Machining a B&W flange.



Forging a tee.



Packing fittings for shipment.



Machining a 24" elbow



The paint line.

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B&W

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TUBULAR PRODUCTS DIVISION

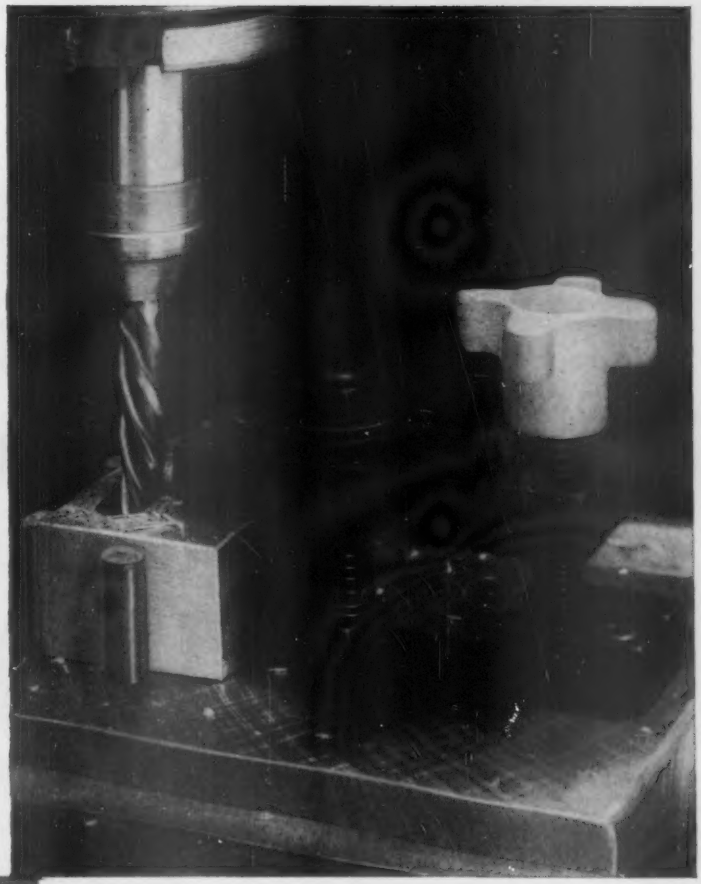
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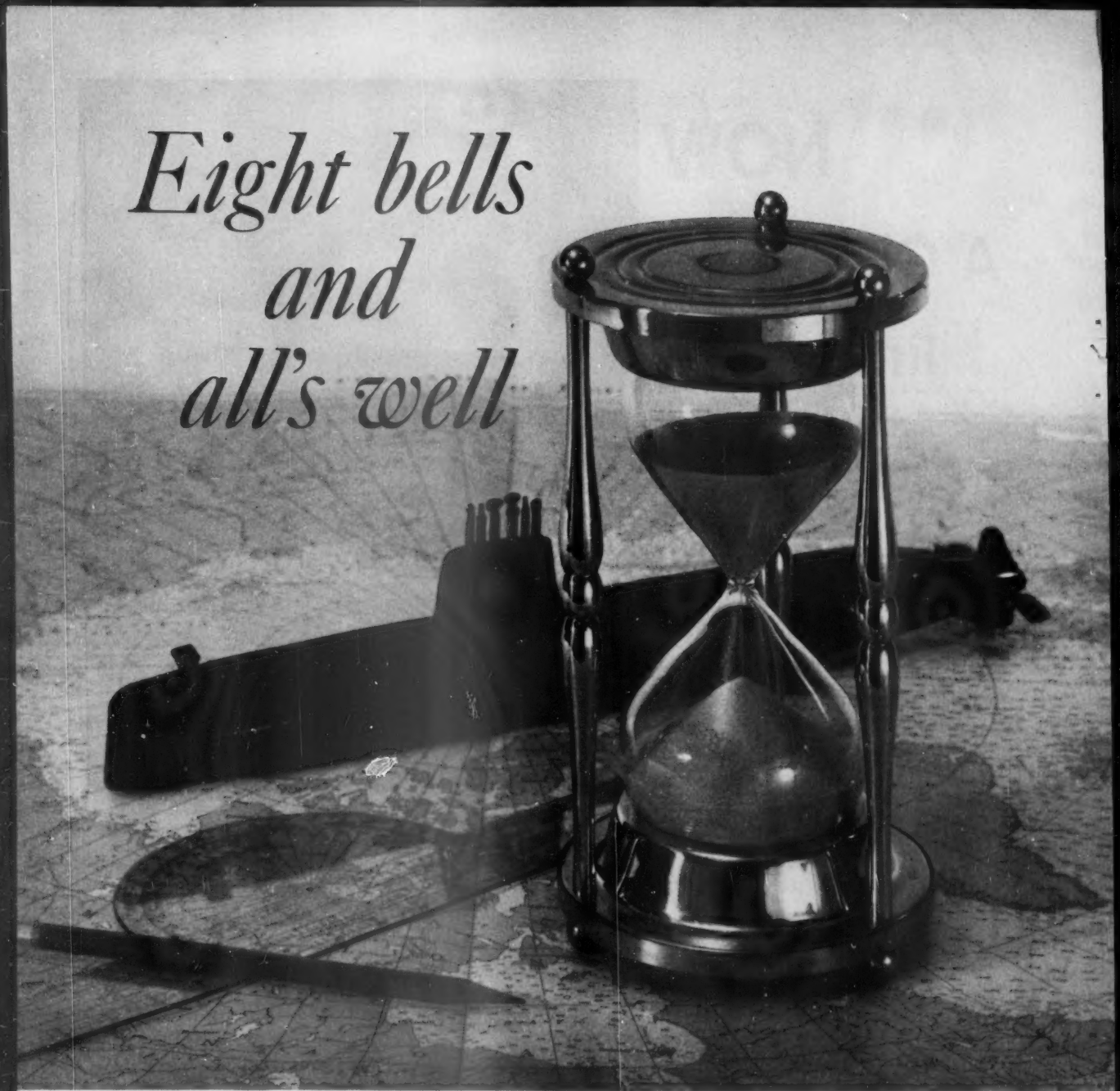
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The Methods and News Magazine For Industrial Buyers

PURCHASING

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What Are They Paying in Purchasing? **70**

Fundamental changes are taking place in purchasing salary scales. Here's the broad picture of what various purchasing jobs—both executive and clerical—are worth.

Purchasing Ties in With Manufacturing **72**

You hear a lot of platitudes about the importance of working with other departments. S&C Electric Co. is one organization that can show you figures on why this policy pays.

How Engineers Can Help the P.A. **75**

This is the kind of suggestion-loaded article you'll want to tear out and route to your chief engineer.

Lower Freight Rates—But Are They Legal? **78**

Shippers associations can help cut freight costs. However, many of them are illegal. ICC is cracking down.

The Facts About Executive Tension **80**

How serious are the stresses and strains of the purchasing executive's job and what can you do about them?

Better Filing Helps Cut Inventories **83**

It seems hard to believe that a slightly more sophisticated method of paper-pushing could cut inventories out in the plant, but that's exactly what happened at Beech Aircraft.

Automation Solves a Buying Problem **86**

Supplying spare parts for a spanking new fleet of jet planes is a taxing job for purchasing. A computer comes to the rescue.

Contracts: What Does 'Or Equal' Mean? **89**

The term "or equal" is common in many purchasing contracts. Here's what the court says about these agreements.

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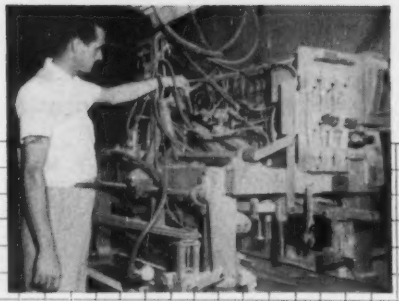
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For More Facts About Ad ←on Facing Page Write in No. 156

The Lane Furniture Company of Aitavista, Virginia, broke its cedar chest production line into groups of operations for air-automation. One of the many circuits, shown here, was designed with quality Schrader components to brand the chest tops with a trademark, bore hinge recesses, and perform vertical and horizontal gang drilling operations. All three jobs are completed in less than 30 seconds!



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3. Typical boring head is operated by pull-type single-acting cylinder. Electrical signal comes from switch on side clamp stop.

4. Individual cylinders apply branding heads. Cycle starts with side clamping. Length of branding cycle is controlled by electric timer.

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Pulse of Business

Industry Evaluating Laos Crisis

THE CRISIS in Laos will compel industry to dust off its mobilization plans, long dormant. While it is hoped that a peaceful solution can be found, the re-evaluation of industry's role in a hot war is in order.

Companies must contemplate what their particular job will be in the overall blueprint, particularly if they are in heavy industry or in activities that are strategically sensitive—such as electronics, space research, or chemicals. Stock-piling, almost forgotten, may be revived. Even if the Laos problem is resolved without bullets being fired by Americans, the problem of inventories now takes on a new meaning.

Computer bookkeeping, now in widespread use, has made it possible to figure inventories closely. This has helped to conserve invested capital in this phase of the business. But a new factor has come into the inventory equation, calling for a more pragmatic approach.

What a Shooting War Would Mean to Business

In the event of a shooting war, such materials as steel, nonferrous metals, and certain chemicals come in for rigid government control. Therefore, most companies will not attempt to build inventories.

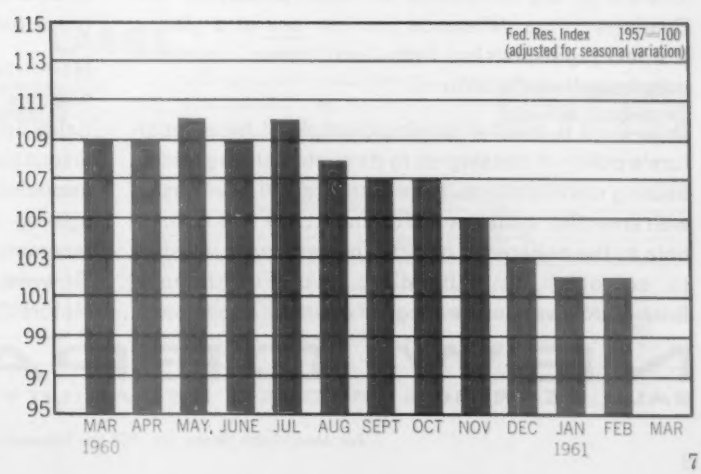
But what about the many other materials of a non-strategic or semi-strategic nature? Lumber, textiles, hides, and grains will all become embroiled even if no restrictions are written for them.

The current situation points up the possibility of commodity price changes that are not hinged directly to the law of supply and demand. Industry must deal with the prospect of an upswing after months of comparatively stable prices. And inflation may again be a problem with too much money chasing too few goods.

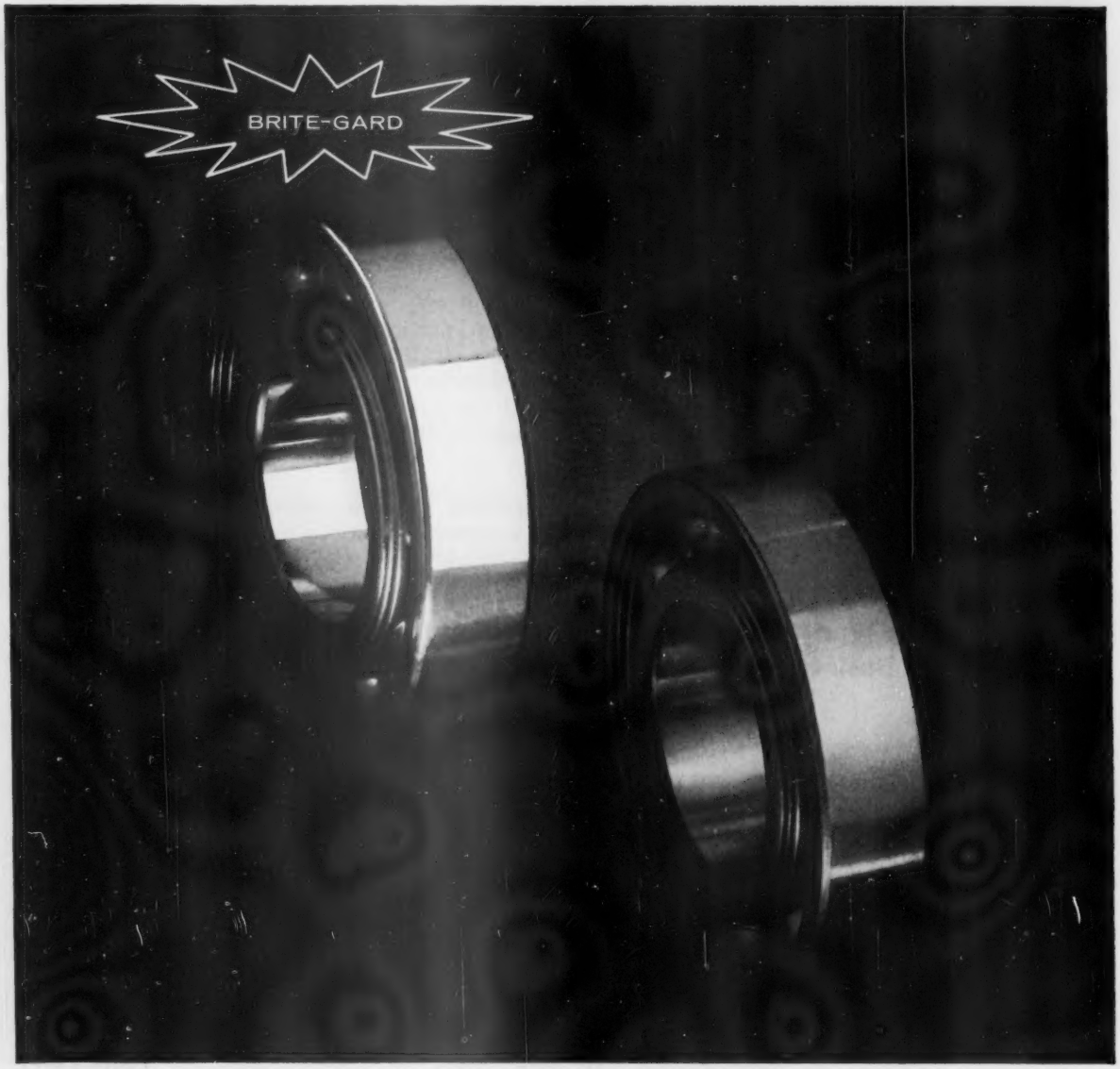
The level of wholesale prices has been remarkably stable during the past year. While the Consumer Price Index rose from 125.6% of the 1947-49 base in February 1960 to 127.5% in February of this year, the wholesale price index increased only from 119.3% to 120% in the same period.

(Turn Page)

Industrial Production Index



The FRB's Industrial Production Index remained unchanged in February at 102 (1957=100). While the mining index fell a point, both durable and nondurable manufacturing stayed at the previous month's level.



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PRODUCTION

Another aspect in the inflation picture is the defense buildup and its effect on the federal budget. The immediate problem is building up defense forces from fourteen Army divisions of 870,000 men to about eighteen divisions with over one million men. An increase is also planned in Navy and Marine Corps manpower, as well as an addition of several wings to the Air Force.

The Eisenhower military budget called for $42.9 billion for fiscal 1962. However, the Kennedy Administration is planning to add a substantial sum to that figure.

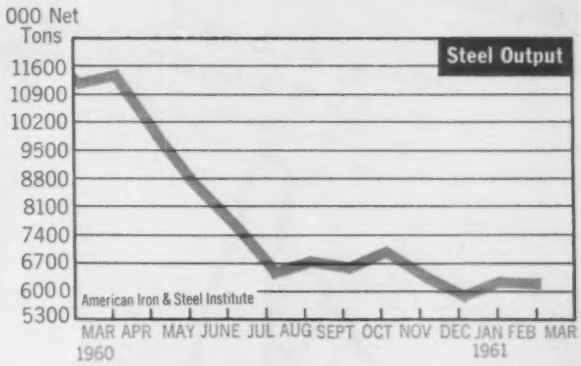
Trouble in Laos also points up the fact that the age of the machine gun, mortar, and hand grenade is by no means at an end. Small and medium size arms must again be considered vital; this will call for a new program of light arms production, even at a time when plans for nuclear warfare must be stepped up.

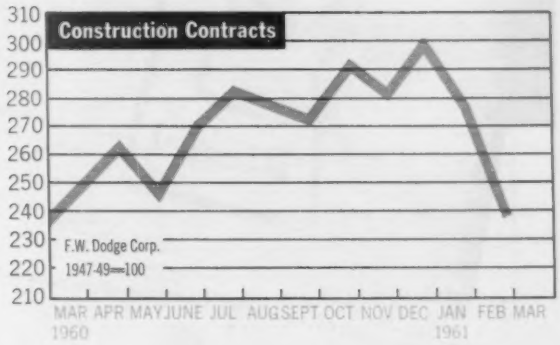
Troop carrier planes and helicopter programs, recently expanded, will be given special attention. But despite this, the infantry will again be carrying the main load.

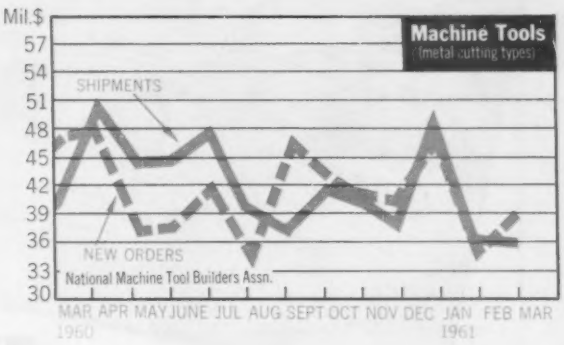
The possibility of a shooting war can give the automobile industry the stimulus it needs to make 1961 a banner year, despite the slow start. This is what happened in 1950 after the start of the Korean War. Automobiles suddenly were in great demand and the lag between orders and deliveries stretched out from almost immediate delivery to ten weeks or longer.

Both Ford and Chrysler predicted a pickup in automobile sales in the second quarter. These forecasts were made without consideration of what a hot war in Laos might bring.

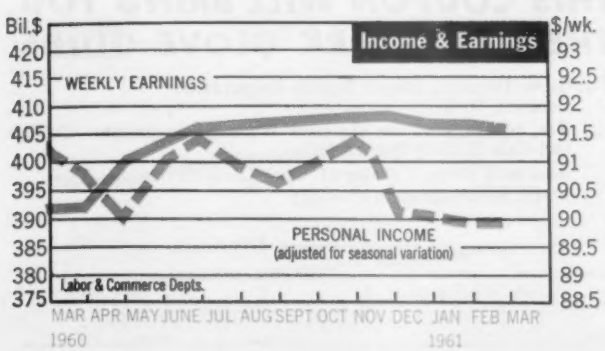
L. L. Colbert, chairman and president of Chrysler, points out that the new range of

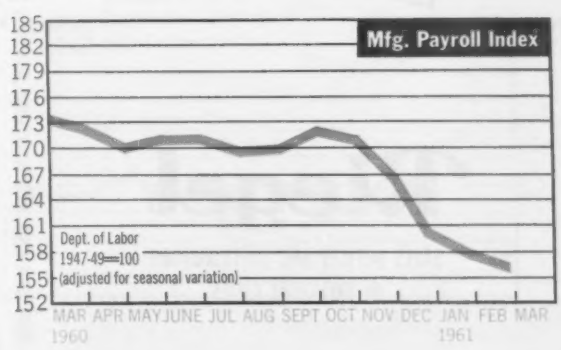






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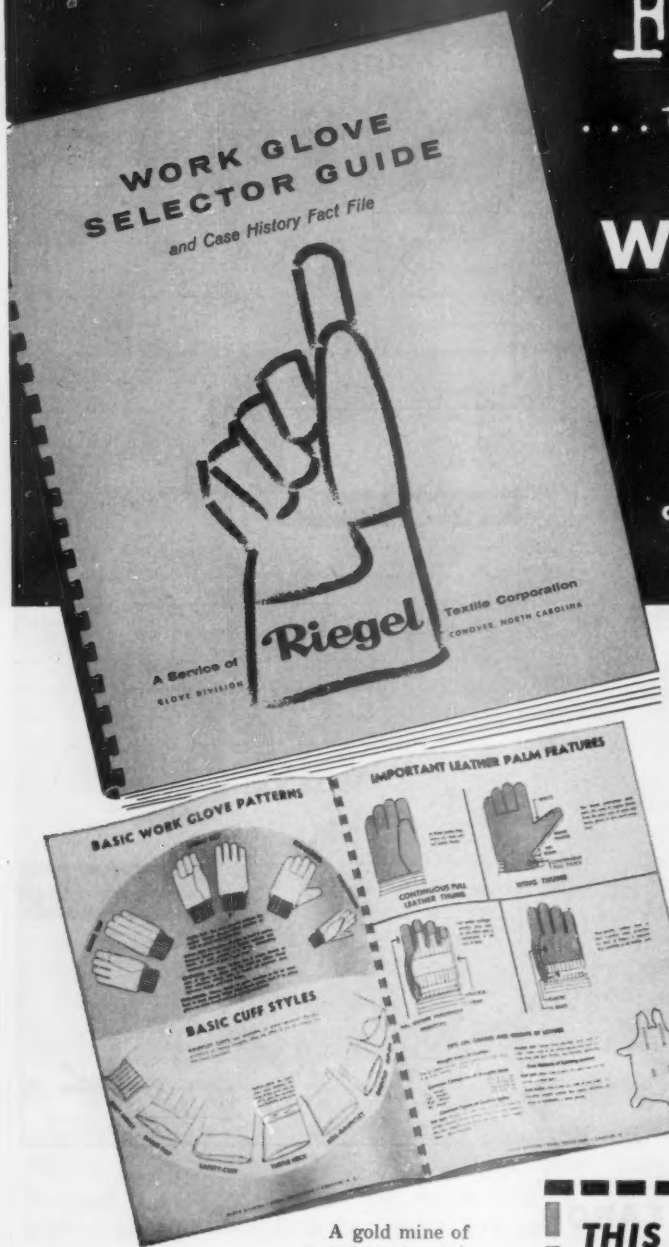


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compact cars created by the American automobile industry can be used to compete with foreign car producers on their own grounds. This year, there has been excellent growth in the foreign markets for both cars and trucks, with overseas business expanding at a much faster pace than domestic sales.

What about the consumer's ability to finance autos in an era of high unemployment? Ernst A. Dauer, director of consumer credit studies of Household Finance Corporation, says that there will be ample credit available to finance cars and other durable goods which consumers will purchase this year. Their debt position, according to Mr. Dauer, is not likely to be a deterrent, once consumers decide to buy.

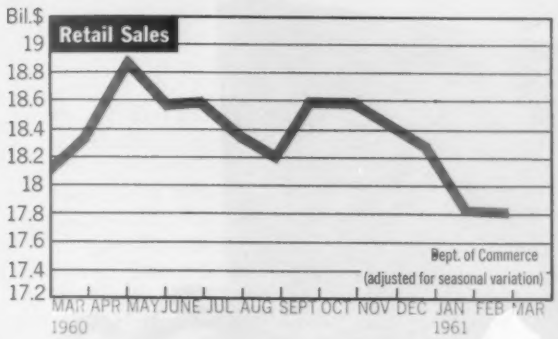
About 2 per cent of installment accounts are currently delinquent. While this is well above the low point reached in 1955 and the summer of 1959, it is materially below the delinquency level in the years from 1950 through 1953.

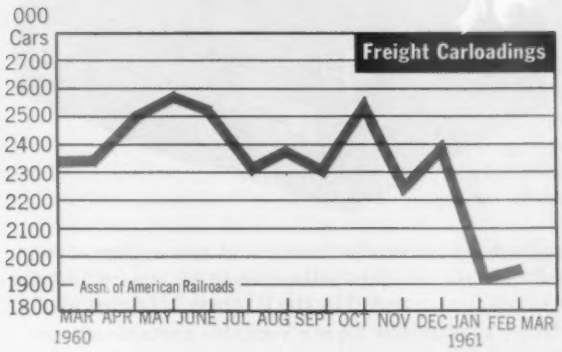
INVENTORIES AND EMPLOYMENT fell in February, according to the latest report of the business survey committee of the Canadian Association of Purchasing Agents. In the same period, prices were weak and production and new orders remained steady.

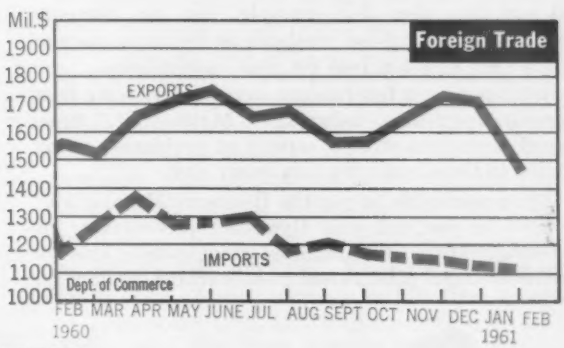
Among the items for which higher prices were reported were tin, steel scrap, and flour. Lower prices were noted for cable, fir plywood, and milk powder.

Most of the purchasing agents surveyed report that they expect materials to be readily available during 1961. The majority feel that they are currently buying on as short a lead time as is practicable.

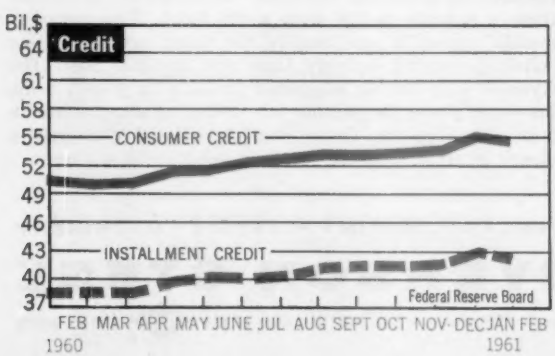
TRADE

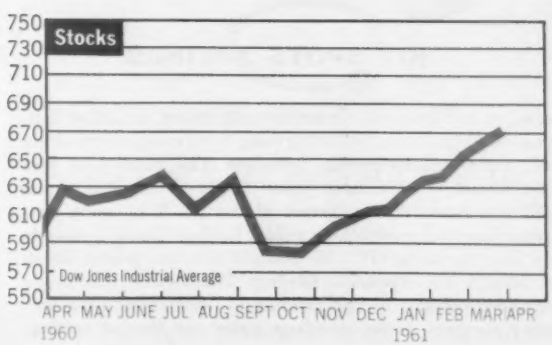






FINANCE





PORTABLE "SERVICE CENTER" sparks new ideas and savings



Hundreds of companies have saved money, improved products and cut production waste as the result of opportunities presented by the Ryerson "Metalogikit."

How? This unique kit is a veritable portable service center . . . lets you explore many alternatives to material you now use. For example, you can compare several different cutting methods on the same piece of steel to see which is best for your application.

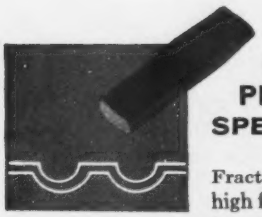
Following are a few random examples showing how Ryerson specialists, using the "Metalogikit," have helped customers with a variety of problems—many similar to those you may face every day.

If you would like to put the Ryerson "Metalogikit" to work for you, call your Ryerson representative for a demonstration—for unbiased recommendations on steel, aluminum, plastics and metalworking machinery.



KIT SPOTS SAVINGS

Scratches and grooves normal to cold drawn, seamless tubing caused high manufacturing costs for a company making small, light-wall hydraulic cylinders. The small I.D. had to be honed to eliminate these faults—often too much metal was removed for proper piston fit. A Ryerson specialist suggested a switch to *welded tubing*. Using a sample from his "Metalogikit," he pointed out the better finish that eliminates expensive honing. The switch was made with these results: higher production, low reject rate, improved product, lower purchase price per foot of tubing.



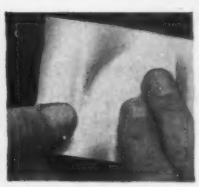
KIT SUGGESTS PROFITABLE SPEC CHANGE

Fractures and rejects were extremely high for a manufacturer cold forming two severe bends in flat, hot rolled bars. A Ryerson specialist examined the ⅜" x 2" bar stock and compared it with a sample of M-1020 flattened round bar from his "Metalogikit." He explained how controlled carbon of Ryerson M-1020 bar would produce great cost-saving advantages in this operation over hot rolled, mild steel. After specs were changed to this Ryerson-supplied bar, fractures and rejects were substantially reduced—bringing new profitability.



NEW ANGLES FOR CUTTING COSTS

In making chairs, a furniture manufacturer was using *rolled* aluminum angles in 6061-T6 alloy where strength was not an important factor. A Ryerson aluminum specialist recommended using *extruded* angles in 6063-T5. Using a sample from his "Metalogikit," he pointed out that this angle would provide all the strength needed in the application, is more easily formed and has a better finish. The change in material was made—cutting costs 15¢ per unit produced.



STAINLESS FROM KIT LEADS TO SAVINGS

This company had an emergency requirement for stainless sheets. Application had always called for Type 304, 16 ga. x 66" x 81", *polished on one side*. Their Ryerson specialist questioned the need for polishing. From his "Metalogikit," he showed them a sample of 304 with a 2B finish. The company readily agreed it was exactly the finish needed *without polishing*—saving delivery time and material cost. The Ryerson man further suggested 16 ga. x 72" x 144", using the cutoff pieces for another job—reducing scrap waste on both requirements. Order was placed and delivered in plenty of time. Over-all result: a substantial saving.

STEEL • ALUMINUM • PLASTICS • MACHINERY

RYERSON STEEL®

Joseph T. Ryerson & Son Inc., Member of the INLAND Steel Family

For More Facts Write No. 160 on Information Card—Page 32

Straws in the Trade Wind

► **GNP TO RISE 2%**—The 1961 Gross National Product will be 2% higher than last year's $503.2 billion, says Standard & Poor's. In the last quarter of this year, the gain is expected to be even more—5% above the $503.5 billion on a seasonally-adjusted annual basis recorded in the final three months of last year.

► **PAPER PRODUCTION UP**—The nation's paper mills operated at 90% of capacity, according to the latest report of the American Paper and Pulp Association. This marks a slight rise from the previous months, when operations were at 87.9% of capacity.

► **MORE STEEL CASTING PRODUCTION**—Production of steel castings is expected to increase in the third quarter, with a marked upturn coming in the last three months of 1961. So says Wilson H. Moriarty, president of the Steel Founders' Society of America. Moriarty predicts a slight decline in the second quarter before the pickup begins. For the year as a whole, he expects production to be about the same as last year's 1.4 million tons.

For the P.A.'s Hot File . . .

Two stern warnings have been issued recently to the petroleum industry about excess capacity for crude oil production and refining. Burl S. Watson, chairman of Cities Service Co., says that unless "surplus capacities are intelligently and realistically managed by the individual competing units of the industry, inventories in 1961 will remain at excessive levels." And the Chase Manhattan Bank's monthly petroleum letter notes that petroleum stocks at the end of last month were around 35 million barrels higher than in March 1960.

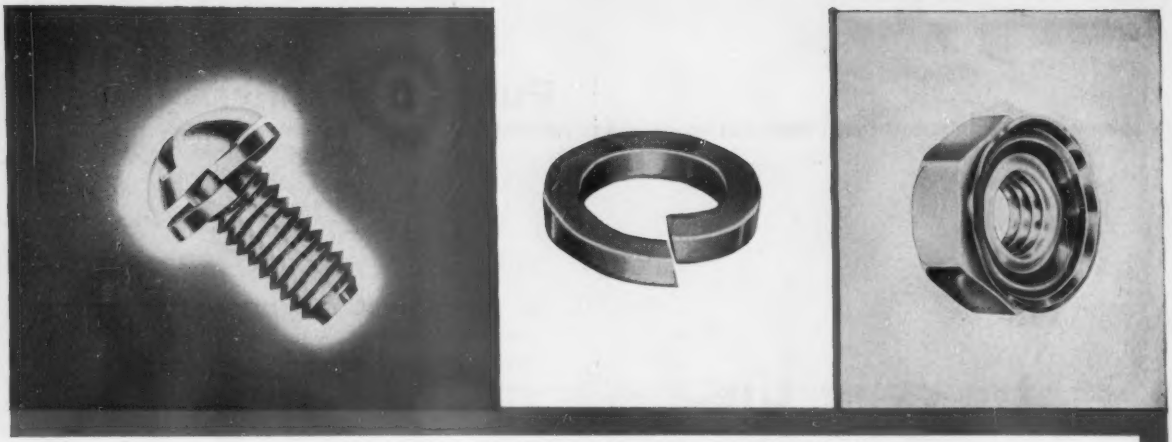
► **ANTI-TRUST FOR P.A.'s**—Up to now, few purchasing agents have been involved in anti-trust proceedings. It's been largely the sales executives who have taken it on the chin. But thoughtful P.A.'s are now taking a second look at the Robinson-Patman Act and its implications. One midwestern P.A. is clearing all of his "special deals" on MRO equipment with his legal department to make absolutely certain that he's not violating any provisions of the Robinson-Patman Act.

► **NEW WOOD-TREATING TECHNIQUE**—A technical advance in the pressure-treatment of lumber and plywood has been announced by Koppers Company. The wood preserving process, Cellon, produces the cleanest surface and makes possible the deepest penetration of any process being used. The treated wood is unchanged in color, size, strength, workability, and glueability—and can be easily clean-finished or painted.

► **WHITE COLLAR WORKER BOOM**—While total nonfarm employment has increased 15% between 1950 and 1960 to 61.3 million, the rise in white collar workers was a whopping 28%. The number of service workers advanced 28%, while blue collar workers rose only 4%. In manufacturing plants today, the ratio of office workers to plant workers is one to four-and-a-half—about half of the ratio of 20 years ago.

► **SIGNS OF A STEEL PICKUP**—Shipments from steel service centers in the first quarter of 1961 were 10% above the fourth quarter of 1960, says the Steel Service Center Institute. March sales were better than any month since the third quarter last year. As a result, the warehouses are stepping up their orders from the mills. Warehouse inventories remained unchanged last month—the first time there has not been a decline since last summer.

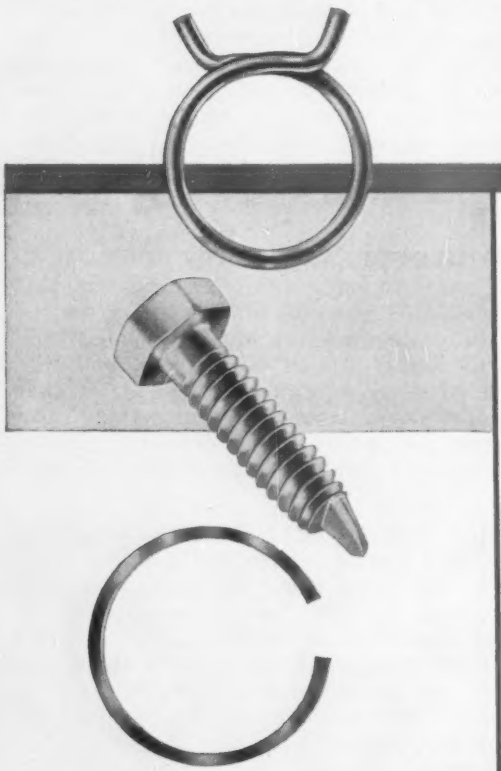
► **AIR FORCE REVAMPS BUYING**—The Air Force is centralizing its policies and programs for weapons development, basic research, and general procurement. This will give the Pentagon tighter control of the $10 billion spent annually for these materials and supplies. Effective July 1st, all work on development and procurement of planes and missiles will be con-



EATON-RELIANCE

FASTENERS

unseen muscles in assembled products



Because the initial cost of a fastener represents only a minor part of the total cost of "using" it in an assembly, the bulk of your fastener savings will come from these features: engineering assistance to insure use of proper fastener, ease of handling on the assembly line, stock availability and service. Metal quality, strength, vibration resistance, durability and manufacturer's reputation are also important parts of your "fastener package."

You can get all of these things by specifying Eaton-Reliance fasteners. They've been used by manufacturers of assembled products for almost half a century.

Write for our new 16 page full line catalog containing complete information.



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For More Facts Write No. 161 on Information Card—Page 32

Straws in the Trade Wind

solidated under the new Air Force Systems Command—which will take over contracting responsibilities of both the Air Materiel Command and the Air Research and Development Command.

► **SPECIALTY LAMP PRICES LOWER** — Specialty type lamp prices were reduced an average of 1% by General Electric. The cuts came primarily in low-volume types of large lamps sold to industry.

► **BUSINESS TO SMALL BUSINESS**—Prime government contracts awarded to small business in February rose 73% in value and 41% in number over the same month in 1960. More than 2000 contracts valued at $80,264,637 were issued in February 1961.

► **CONTROLLING OFFICE RECORDS** — Sixty-one percent of the companies surveyed by the National Office Management Association have no formal records control program. Slightly more than 50%, however, do have an informal program of some sort. The ones who do have a program reported that on the average they were able to eliminate 20% of the records which had become useless. Other savings included space, time, duplication of effort, and equipment.

► **DURABLE SALES, ORDERS RISE**—Durable goods manufacturers' sales and new orders rose in February, reports the Department of Commerce. Seasonally-adjusted sales advanced $100 million to $13.4 billion, while new orders were up $300 million to $13.3 billion.

► **COAL AND ELECTRICITY** — Bituminous coal, which accounts for two-thirds of the fuel supplies of electric utilities, expects to get an even larger share of this market. Last year, 176 million tons of coal were used to generate electricity; this figure is expected to double by 1975.

► **USED MACHINE TOOL SALES OFF**—Dollar sales of used machine tools fell 33.8% from the previous month, according to the latest monthly report of the Machinery Dealers National Association. Its monthly index fell 42.7 points to 83.8 (1957=100).

► **BUSINESS FAILURES INCREASE**—Business failures rose 3% to 1449—the highest toll since April 1958—reports Dun & Bradstreet. Casualties occurred at an annual rate of 64 per 10,000 listed businesses. In the same month, dollar liabilities climbed to a six-month high of $88.1 million.



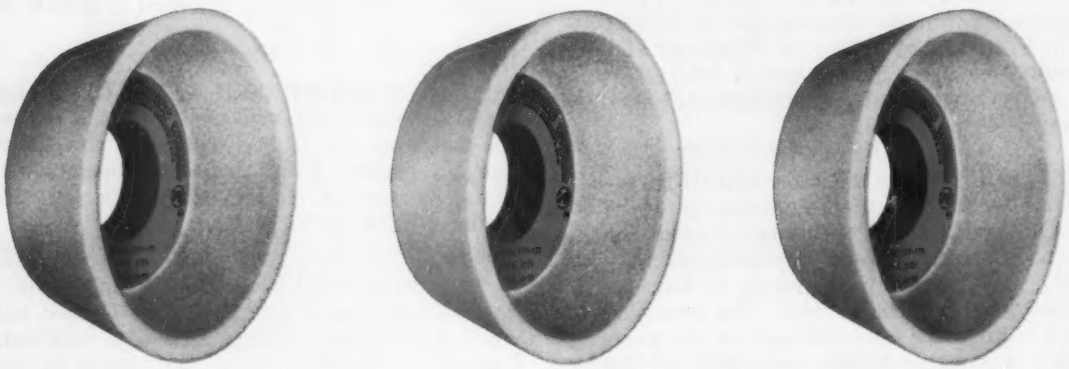
H. Leslie Hoffman

QUOTE!

Reliability in industry costs money initially "but it will reduce the total cost of the equipment and its usage to the government," says H. Leslie Hoffman, president of Hoffman Electronics Corporation. "Reliability is a growth process in which there is no substitute for experience," he says. "It is the maturity of design after rugged testing, pre-production, and production experience. Reliability must first be designed into equipment, then quality workmanship built into it." Mr. Hoffman also calls for "a national reliability policy applicable to all types of military electronic equipment and comprehensive enough to not only include the component specifications but to recognize the operational use of the end-equipment. This reliability policy, once established and initiated with all services, must be supported and recognized by the contracting officers at the point of the original bid."



POSITIVE DUPLICATION—EVERY TIME!



Music to please you is identically reproduced by these three hi-fi records pressed from the same master recording. The three toolroom grinding wheels (above) will also please you with their masterly Positive Duplication. That's because they are CINCINNATI (PD)° GRINDING WHEELS.

FAMOUS, UNIQUE (PD) PROCESS

Unique in the industry, the famous Cincinnati (PD) manufacturing process is governed by 36 unvarying quality control steps. Print-weigh tickets, for example, must match the weights for every mix—*exactly* as specified on the Master Card which controls every operation in the rigid procedure.

UNIFORM, PREDICTABLE PERFORMANCE

This extraordinary attention to manufacturing detail results in wheels of unsurpassed uniformity.

You can reorder CINCINNATI WHEELS with confidence, because they give you the same good job time after time after time. You use fewer (PD) wheels because they last longer.

CALL CINCINNATI TODAY

Factory trained by the Cincinnati Milling Machine Company, our grinding specialists are available to you for consultation on all your grinding problems. Call your CINCINNATI GRINDING WHEELS Distributor, or contact us direct, Cincinnati Milling Products Division, Cincinnati 9, Ohio.

(PD) POSITIVE DUPLICATION

CINCINNATI°
GRINDING WHEELS

°Trade Mark Reg. U.S. Pat. Off.

A PRODUCTION-PROVED PRODUCT OF THE CINCINNATI MILLING MACHINE CO.

For More Facts Write No. 162 on Information Card—Page 32

- **Nonferrous Buying Fails to Pick Up**
- **Copper Labor Contracts Expire June 30**

THE NONFERROUS metals markets remain sluggish as industrial output continues at a low level. Large inventories in the hands of suppliers is another reason metal buyers are keeping their nonferrous stocks at a minimum.

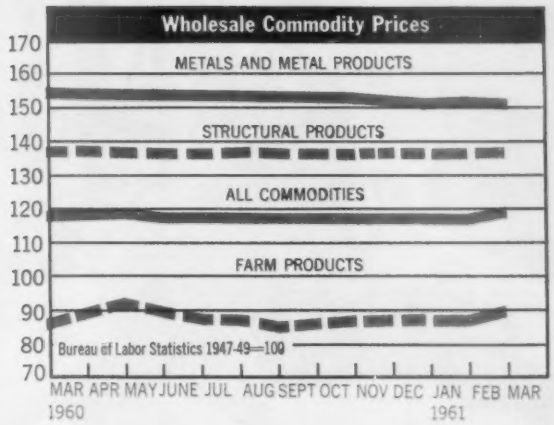
Here's the present market situation in a number of the major nonferrous metals bought by P.A.'s:

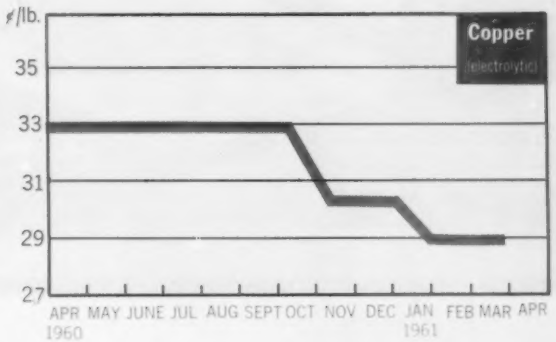
Copper: With labor contracts at mines and refineries which produce one-third of the nation's copper coming up for renewal on June 30th, some P.A.'s are taking a second look at their copper inventories. Although most inventories are sufficient to meet present needs, improved industrial activity in the third quarter coupled with a labor walkout might result in spot shortages.

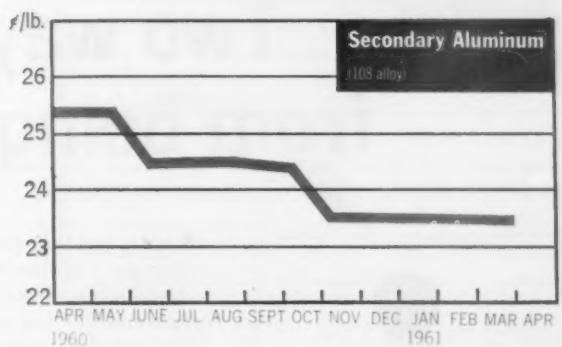
Zinc: Zinc buying has been quiet in recent weeks. Producers are hoping that their production cutbacks at mines and smelters will soon bring about a closer supply-demand relationship.

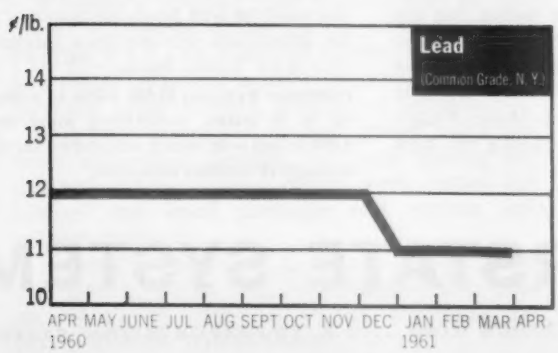
The American Zinc Institute is currently carrying out a program to diversify the markets for zinc. At the present time, about 80% of all the zinc sold in the United States goes to galvanizers and die casters.

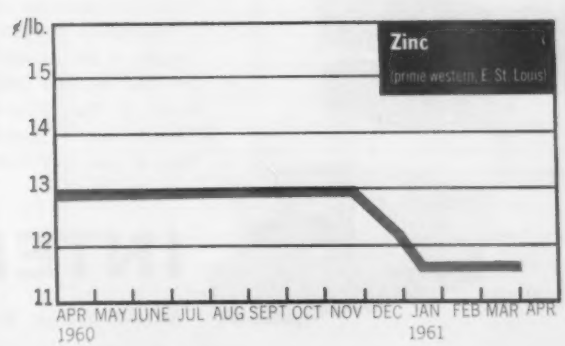
Lead: Lead buying picked up slightly at the end of last month as many P.A.'s placed orders for April shipment. This follows the pattern of recent months where orders have risen

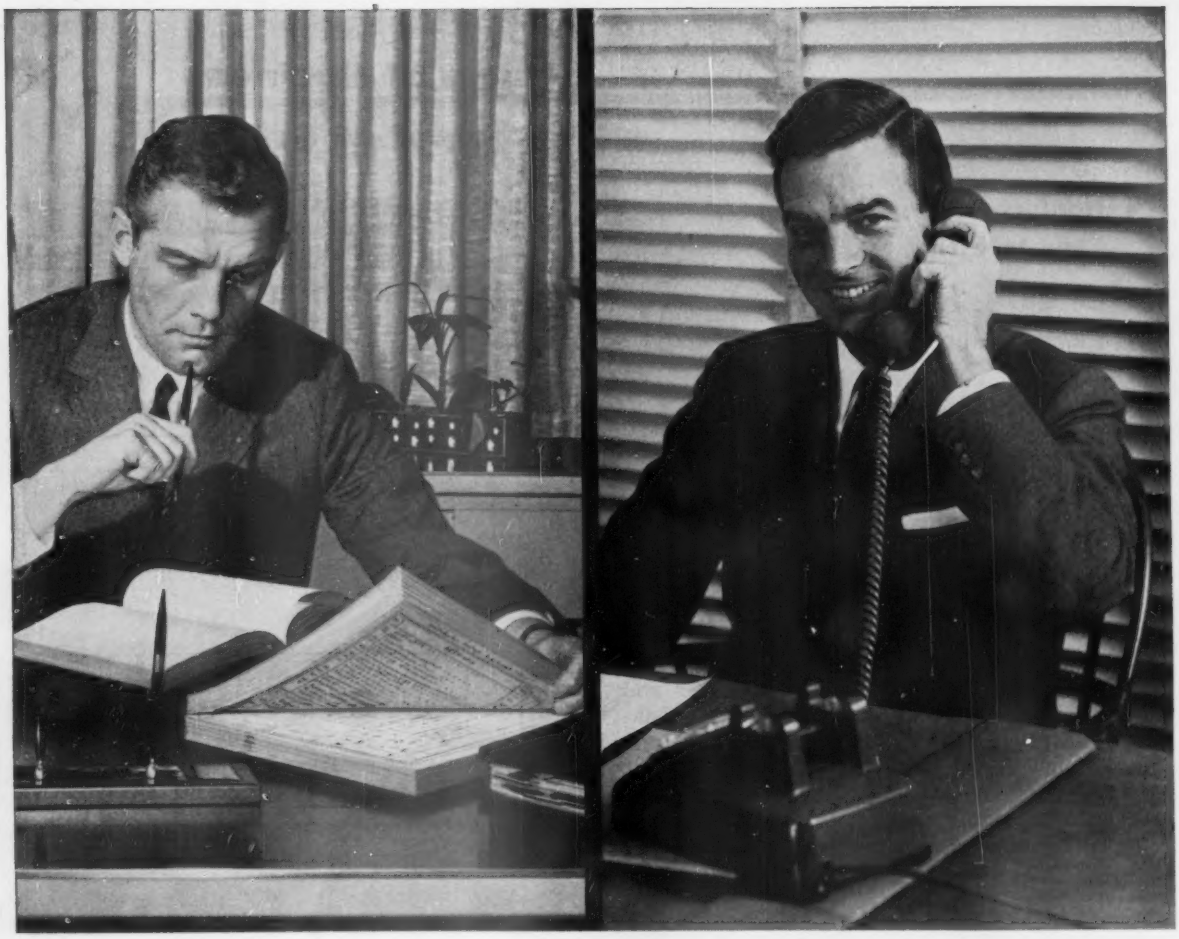












Two ways to keep from being outclassed!

■ It's a problem. Many companies each year are "outclassed" by their freight classifications — and waste thousands of dollars in shipping costs. In many cases, their own descriptions are at fault. If you have the uncomfortable feeling that this is happening to *your* company, you can do one of two things. Become an expert on classification yourself by drudging study of the "National Motor Freight Classification" manual. That's the hard way, as you well know.

Or, do as many other companies are doing and ship Interstate System, the motor common carrier whose people are trained to give you every advantage in the book. You can't afford to be outclassed — and you won't be with Interstate System. Call the Interstate transportation specialist. He's in the Yellow Pages.

Interstate System: 23,000 miles of authority in 24 states, connecting more than 9,000 points with direct, single-line service through 76 modern terminals.

Grand Rapids
Michigan

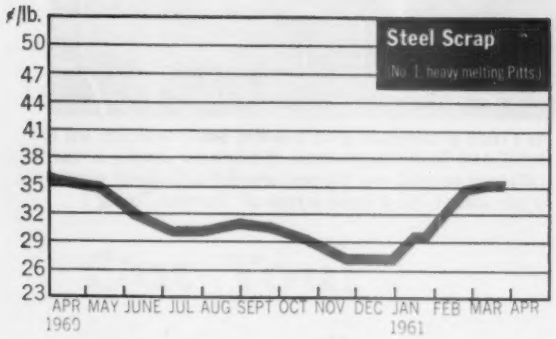


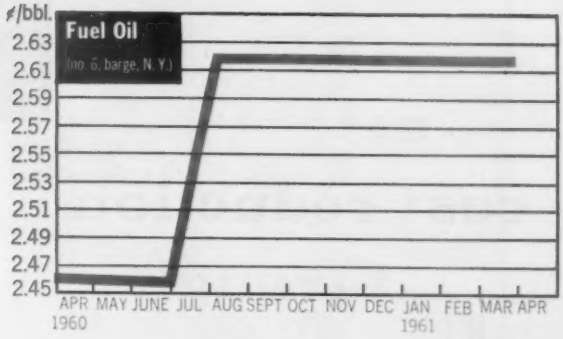
INTERSTATE SYSTEM

MORE THAN A TRUCK LINE . . . A TRANSPORTATION SYSTEM

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More on Price Trends



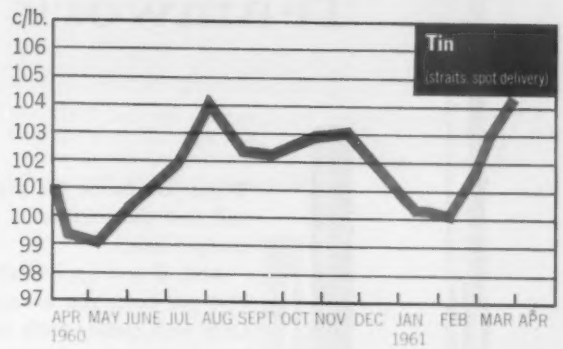


at the end of the month and then tapered off for the next couple of weeks.

The major lead producing nations of the world agreed recently at a four-day meeting in Mexico City to cut 1961 output 2% below estimated world consumption. In recent years, supply has exceeded demand; producers' inventories increased 90,000 tons in 1960.

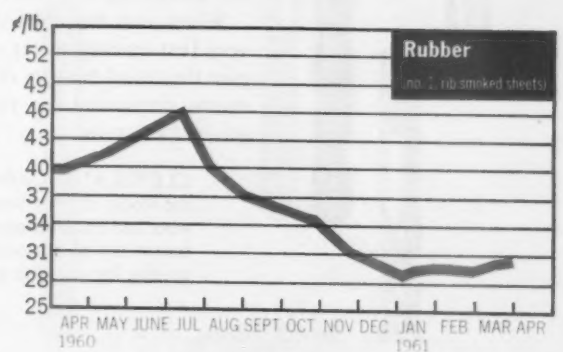
Tin: Tin prices here have been rising slightly as output declines. Shipments from Bolivia, Indonesia, and the Congo have been off recently.

The price in Singapore recently hit the highest level since December 1956. In London, prices have been generally firm.



Aluminum: First quarter sales of aluminum by distributors were about 5% above the similar period of 1960. Largest increase came in extrusions, which jumped 23% above the first quarter of last year.

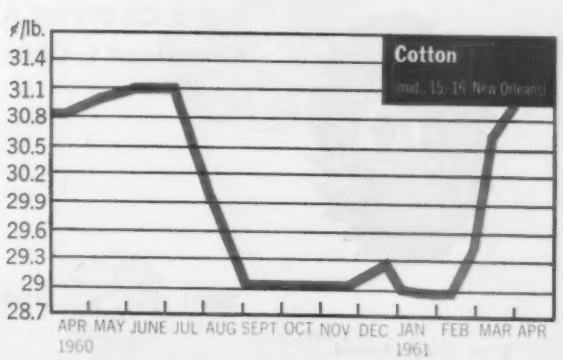
Nevertheless, primary production of aluminum declined in February, according to the Aluminum Association. Output dropped 22,867 tons to 138,650 tons during the month.



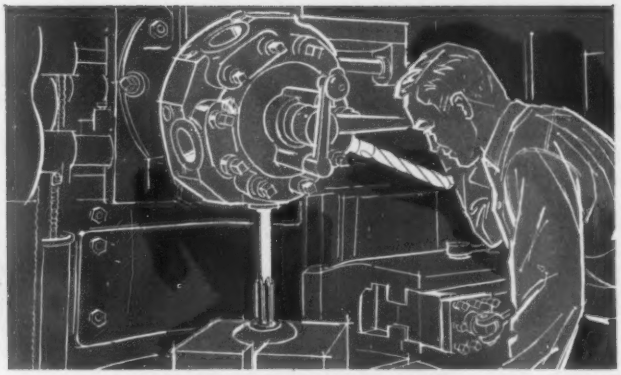
Wholesale Prices: The Department of Labor's Wholesale Price Index rose 0.2% in February to 120 (1947-49=100). The metals and metal products index registered its second increase after several months of decline.

However, increases in fuel prices were the most important upward influence among industrial prices. Lower prices were noted for lumber and wood products and rubber and rubber products.

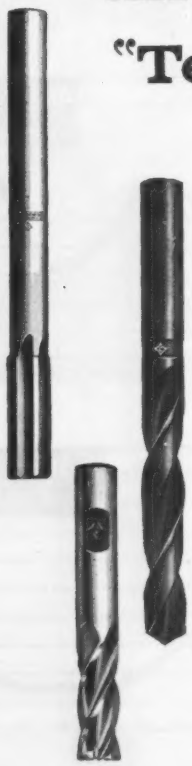
Prices for prepared paint advanced during the month. Paint suppliers blamed the hike on cumulative increases in raw materials, labor, and distribution costs.



How to get cost reduction through "Teamwork Tooling"



As a result of cooperation of his Industrial Supply Distributor and a CLEVELAND Service Representative, this customer was able to ream 1,800 holes per grind in a 1040 steel projectile part, without sacrifice of hole size or finish. A typical example of "Teamwork Tooling"!

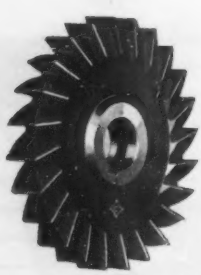


When you tackle the problem of cost reduction, you will find the solution is not *cost per tool*, but rather *cost per hole.*

And, if you apply Value Analysis to the subject of cost per hole, you always arrive at the same answer: Only with *quality* tools can you get faster production, less down-time and fewer rejects.

When you buy CLEVELAND Tools you get the very best manufacturing experience and know-how . . . *plus* the added benefits of "Teamwork Tooling", which means combining the skills of many people to help you reduce costs.

CLEVELAND Quality Tools can be obtained from the stocks of your local Industrial Supply Distributor, who has the assistance of our trained Service Representatives to recommend savings through proper tooling for *your* job conditions.



THE CLEVELAND TWIST DRILL CO.
Cleveland 1, Ohio

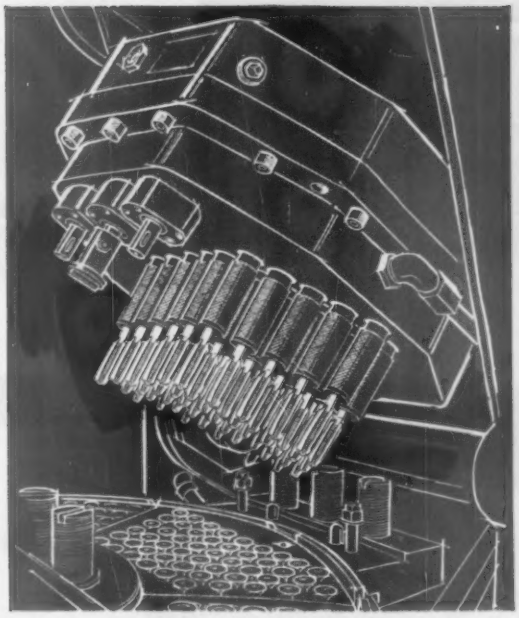
QUALITY CUTTING TOOLS • BEST SERVICE THROUGH YOUR LOCAL DISTRIBUTOR

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For More Facts Write No. 164 on Information Card—Page 32



To Help You Cut Your Tapping Costs



BAY STATE Taps have the strength and stamina to reduce costly down-time on this high speed set-up, where 25,000 holes are threaded per hour. The taps have built-in QUALITY . . . your assurance of cost reduction on all jobs, whether large or small.

The most economical tapping operations can be performed only with *highest quality* taps.

You can reduce your costs with BAY STATE *Quality* Taps. These tools are designed, engineered and manufactured for precision performance . . . to give you long, dependable service which is your assurance of maximum production with a minimum of costly down-time.

BAY STATE *Quality* Taps and Dies are carried in stock for prompt delivery by your local Industrial Supply Distributor, who maintains balanced inventories for you at lowest cost. Moreover, the steady flow of orders from hundreds of distributors enables us to produce the tools in large, economical quantities—with resultant advantages to you.



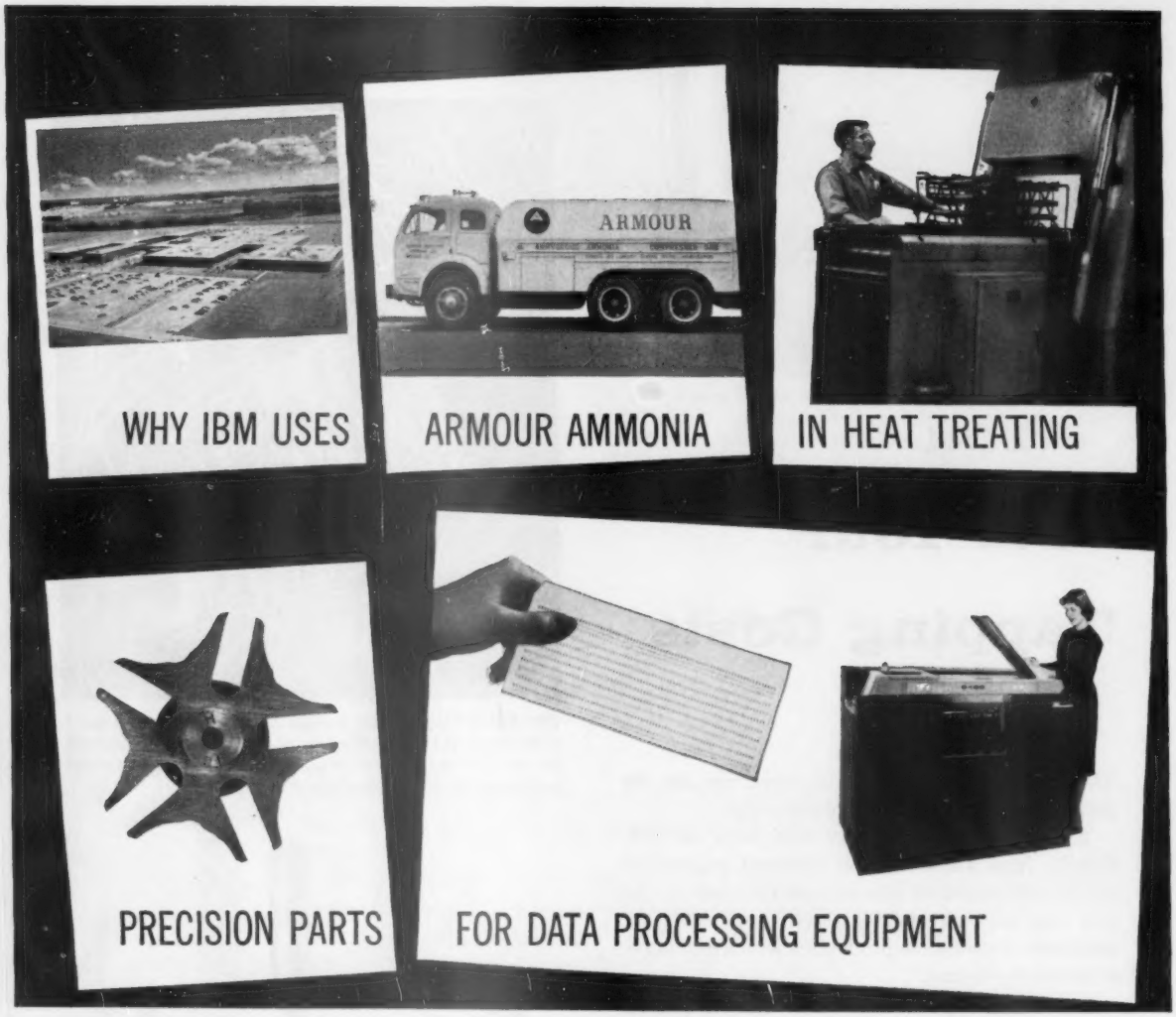
BAY STATE TAP AND DIE CO.
Mansfield, Mass.

Subsidiary of The Cleveland Twist Drill Co.

QUALITY CUTTING TOOLS • BEST SERVICE THROUGH YOUR LOCAL DISTRIBUTOR

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For More Facts Write No. 165 on Information Card—Page 32



Precise heat treating results are a must for vital components of the electronic marvels produced by International Business Machines Corp. in Rochester, Minnesota.

IBM heat treats about four million parts a year in Armour ammonia atmospheres. Heat treating processes used include carbonitriding, nitriding, annealing and brazing. A good example of one of these parts is the Geneva Star Wheel shown above, which must be precise and as wear-resistant as possible.

Helping to create consistently fine results is the uniform, high quality of Armour ammonia. Tested after filling to be at least 99.98% pure when delivered, every tank truck of Armour ammonia meets IBM's rigid standards for heat treating.

Armour ammonia has been used since the plant opened 2½ years ago. But this confidence goes back further. Armour worked closely with IBM engineers in planning the initial installation, preparing blueprints, and choosing the proper ammonia equipment and parts. Armour technical men also inspected the system and helped to get it under way and running smoothly.

Prompt delivery from Armour's South St. Paul plant is also important to IBM. Operating around the clock, IBM often requires same-day or next-day service—and they get it from Armour.

Call Armour for ammonia. High purity assured (*every* cylinder and tank truck tested to be *at least* 99.98% pure)...fast delivery (171 distribution points across the country)...expert technical service (whenever needed and at no cost).

AMMONIA SALES

Armour Industrial Chemical Company

One of The Armour Chemical Industries

110 North Wacker Drive • Chicago 6, Illinois

For More Facts Write No. 166 on Information Card—Page 32

Kennedy Predicts $2 Billion Budget Deficit

PRESIDENT KENNEDY estimates the current federal budget will show a deficit of over $2 billion. And for fiscal 1962, increases in military spending will likely throw next year's government finances out of balance even more.

The Kennedy estimates represent a revision of the Eisenhower budget, which had originally forecast a modest $79 million surplus for fiscal '61 and a $1.5 billion surplus for fiscal '62.

The switch from surplus to deficit is explained by Kennedy as the result of sharp cuts in business profits and a scaling down of incomes. Both have resulted in lessened tax revenues.

Kennedy says that federal budgets will be in balance over the years of a business cycle—with deficits in recessionary periods and surpluses in prosperity.

For fiscal '62, the increase in military spending — including space programs and a modernization of conventional weapons —is expected to create a deficit for the year.

• Administration Acting To Boost Employment

Administration officials are faced with the problem of dramatizing the economic ills of the nation to garner support for the Kennedy program. At the same time, they are working to encourage the recovery cycle that is now underway.

Recently Secretary of Commerce Luther H. Hodges told a Congressional committee that "103 urban areas are today suffering from substantial and persistent unemployment, and this is resulting in personal hardship and deprivation for many individuals and their families."

Secretary Hodges spoke up in favor of area redevelopment legislation. He said "America is today confronted with this serious economic problem on which action is needed, and quickly."

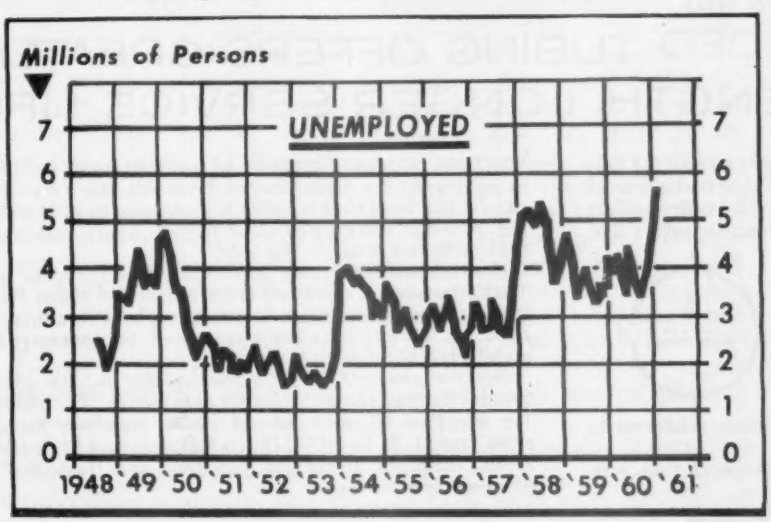
Two days later, Secretary Hodges told a news conference that "viewed in historical perspective, and in terms of our basic strengths and future potentials, the productivity of the American economy is without equal, and without limit.

"Today in America, a nation which possesses only one-sixteenth of the world's population and one-fourteenth of the land area, we produce and consume more than one-third of all the world's goods and services. American consumers, representing one out of sixteen consumers throughout the world, own and use two out of every three automobiles, one out of every two telephones, two out of every three TV sets—and they account for three out of every five scheduled air flights."

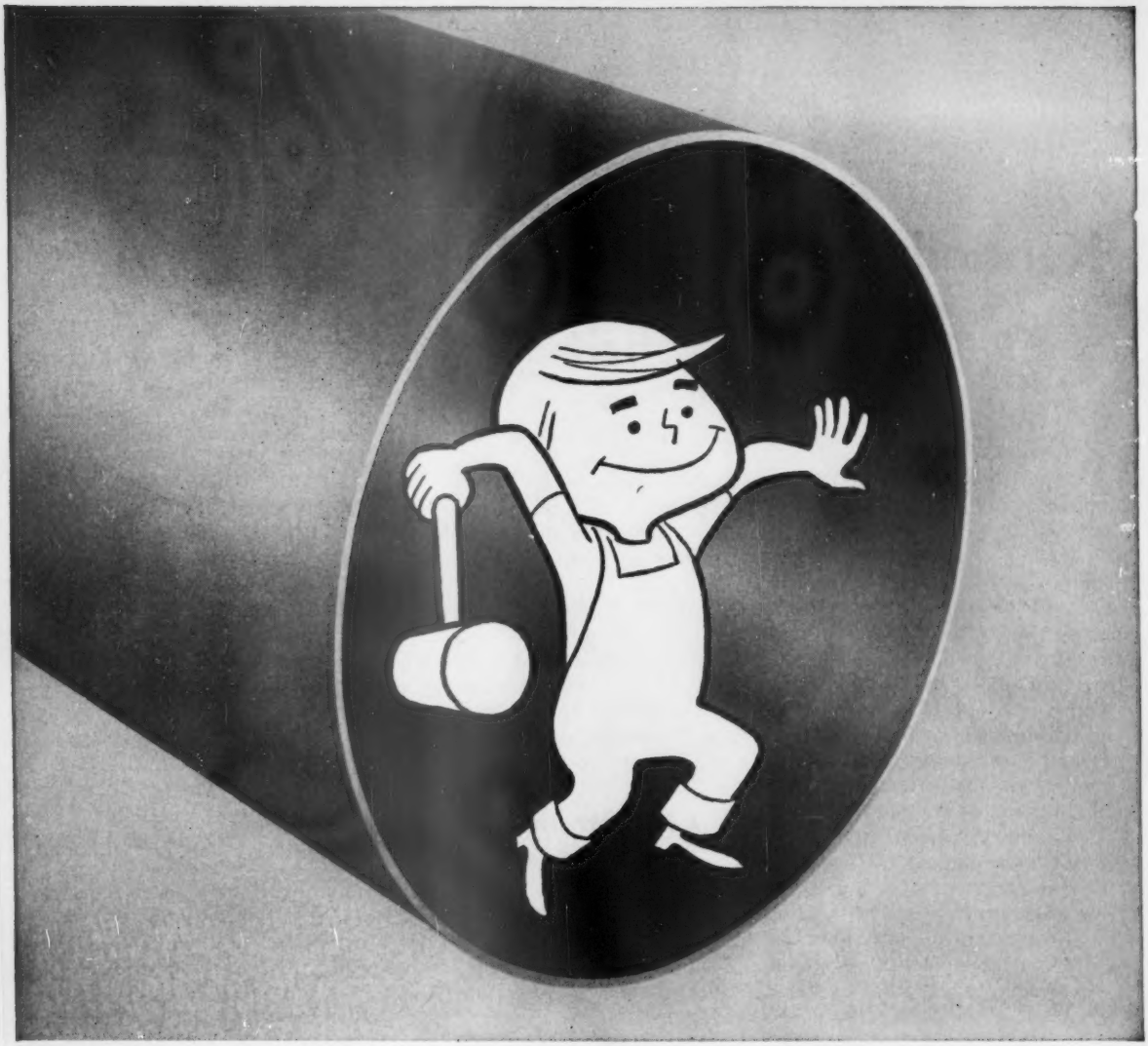
Justification for these seemingly contradictory statements is that the recession has been mild in its impact—except for the high level of unemployment. The level of unemployment will shrink during the spring months, but is still expected to be greater than 5 million workers at mid-summer.

The problem of a high rate of joblessness is greatest among factory workers. Winter figures showed one out of every 10 factory workers unemployed. The unemployment rate among auto workers was 25%; among steel

Unemployment Tops 5.7 Million



More than 5,700,000 workers are currently unemployed, reports the Department of Labor. In mid-March, two-thirds of the nation's major industrial areas had "substantial unemployment."



"The Gravity Kid" shows why

CONTOUR-WELDED TUBING OFFERS GREATER FATIGUE STRENGTH, LONGER SERVICE LIFE

Tubing fatigue strength depends largely *on how the tube is welded,* and the results obtained. Tubing that's smooth inside – free of flaws and bulging weld beads – offers much greater fatigue strength and longer service life.

Contour-welded* ***tubing is smoother inside*** **than** conventionally-welded **tubing. It's smoother because *it's welded at the bottom.* Gravity pulls the metal down so that the weld corresponds to the tube's inside contour. There's no bulge on the inside surface. Even on the outside, the seam closely conforms to the tubing shape.**



Contour-welding provides greater strength **than conventional welding, because in conventional welding, gravity pulls the molten metal down into the tube. This can form a bead that is difficult to remove by cold working. And cold working can lead to deep, sharp undercuts that seriously weaken the tube.**

Contour-welded tubing is smoother than seamless, too. **That's because it's formed from uniformly rolled strip steel; whereas, seamless is produced by extruding or piercing. This strip is 100% inspected. So, there are no undetected tears or fissures inside.**

See for yourself why Contour-welded tubing offers greater fatigue strength, longer service life. **Write today for our free 48-page manual which describes tubing sizes from 1/8" to 40" O.D., in stainless and high alloy steels, titanium, zirconium, zircalloy, and Hastelloy**.**

*U.S. Patent 2,716,692

**Trademark Haynes Stellite Co.

TRENTWELD® Stainless and High Alloy Tubing

Trent Tube Company, a Subsidiary of Crucible Steel Company of America, General Offices and Mills: East Troy, Wisc.; Fullerton, Calif.

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workers, 16%; and among machinery workers, 8%.

The recovery cycle will restore jobs to a number of these factory workers, but Department of Labor analysts say they don't know how many will be recalled, and how many jobs will have been eliminated by technological improvements. Kennedy Administration officials maintain that their program is aimed not only at counteracting the recession, but also at creating new jobs.

• See Automobile Sales Pickup Taking Shape

Auto sales are beginning to rise. There is a general attitude of confidence in the industry that the consumer buying log-jam has been broken.

Government analysts of the industry estimated at the beginning of the year that the total number of passenger units to be produced this year will be 5.8 million. Forecasters responsible for this figure told PURCHASING Magazine that they have no reason now to change their estimates. They expect that sales may reach the 6 million level, representing a pull-down in the current new car inventory of some 200,000 cars.

The government spokesmen feel that a one million inventory of new cars is not excessive if the industry is to sell a large number. There are so many lines and models within each make that a dealer has to maintain a big inventory if he is to achieve a large volume of sales. These sources also say that in nine of the 12 months last year, there was an inventory of a million new cars in the industry.

Compacts will constitute between 35% and 38% of the market in 1961, according to the government analysts. The growth of compacts as a market factor will be somewhat slowed by the new "in-between" lines that will be brought out later this year.

• 2nd Half Is Key to '61 Prospects for Steel

The upturn in steel is somewhat slower than expected. There is some skepticism in the Department of Commerce now that the total ingot tonnage for 1961 will reach 1960's level.

1960 ingot production was just under 100 million ingot tons. The early forecast was that the steel industry would at least reach the same figure this year. But tonnage for exports and for the automobile industry have not been as great as was projected earlier, even though a turn upward is still expected in the third quarter.

Steel production in January and February was 12.6 million tons. No sharp pickup is expected in the next few months. This means that there will have to be a sharp stepup in output in the third and fourth quarters if production for the year is to reach the 100 million-ton level.

Scrap Prices Firming

Department of Commerce analysts have no specific answers as to where the increase will come from. No one expects a great boom in steel alone. What is expected is a pickup in demand all across the board, from autos, agriculture, export, canning, and construction.

Prices of iron and steel scrap have been firming up. The steel industry has been operating on 48% pig and 52% scrap recently, indicating the favorable level of scrap prices that prevail.

Main reason for the development of a firmer tone in scrap prices is the substantial tonnage of scrap being shipped abroad. Last year a new tonnage record of 7.2 million tons for export was set—with most of it going to Japan.

Another factor firming up scrap prices is greater buying by U. S. mills in anticipation of an increased demand for steel later in the year.

—A. N. Wechsler

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New 4000 Series Industrial Tractor for work demanding up to 42 drawbar horsepower; new 2000 Series for work requiring up to 32 drawbar horsepower.

Gasoline or diesel, choice of transmissions, job-matched with dozens of front, side and rear attachments.

Get details from your Ford Tractor Dealer, or write:

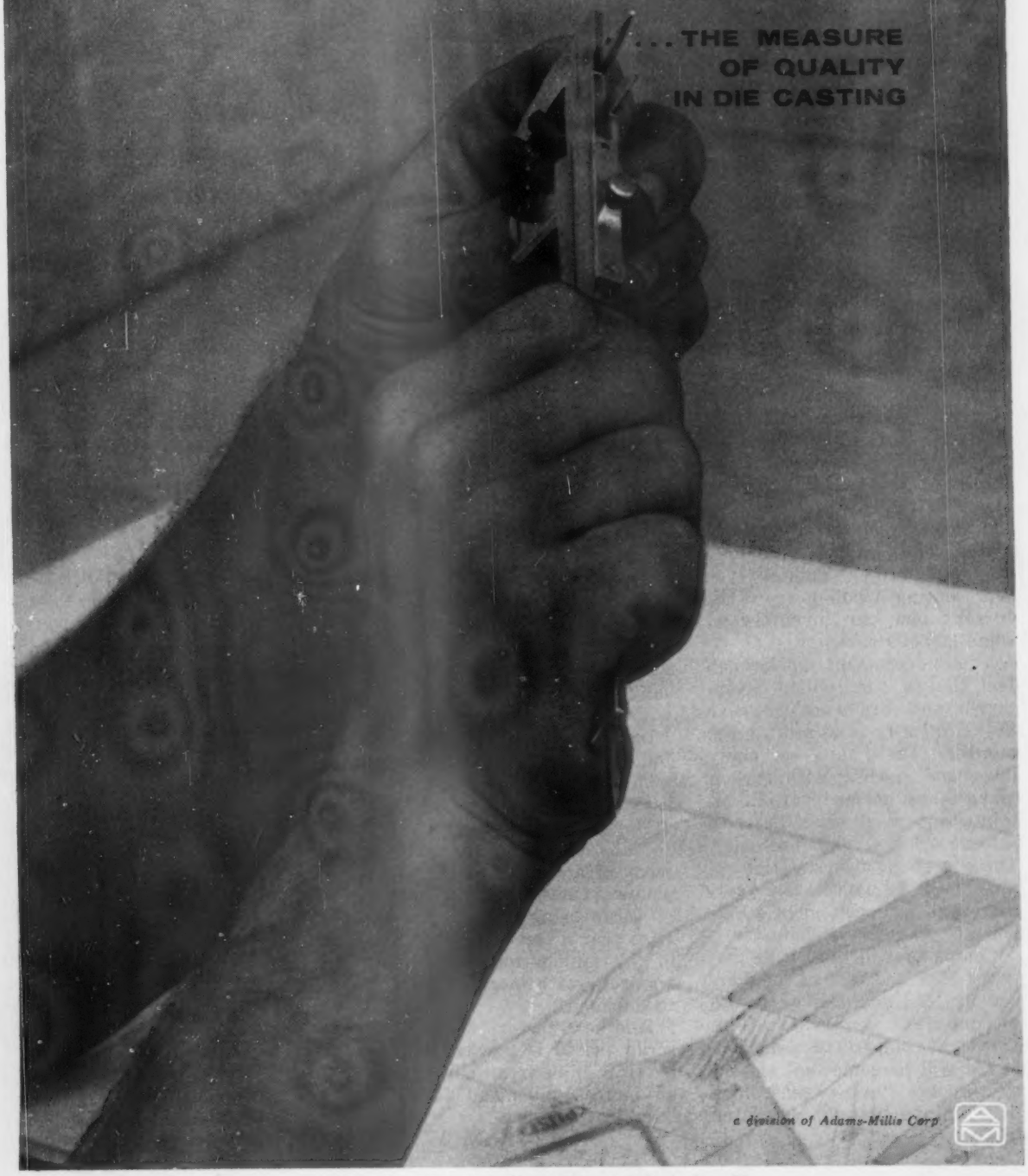
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TRACTORS
EQUIPMENT

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German Currency Revaluation Causes Trading Uncertainties

THE FULL repercussions on international trading patterns of the German currency revaluation will not be felt for some months. Although the upward change in the value of the mark was unexpected in its timing and extent, it had been widely regarded as inevitable sooner or later.

The degree of revaluation was equally widely expected to be about double the 5% shift actually made. Now that the Germans themselves have made it unmistakably clear that they won't alter the value of their currency again in the foreseeable future, speculation has shifted to other currencies.

A general realignment of exchange values has been necessary for some time. But many economists here feel that the shift between the strongest and the weakest currencies ought to have been around 10%. As the Germans, followed by the Dutch, have seen fit to upvalue their own currencies by only 5%, pressure is developing for other countries—notably Britain and the U. S.—to devalue their units by 5%.

These continuing flurries of speculation have led to a considerable outflow from Britain of funds which were attracted to London last year. Despite the stemming of the gold outflow from the U. S., speculation on a devaluation of the dollar has not yet been killed completely. In addition, funds are shifting to Italy and Switzerland in hopes of an upward change in the values of the lira and the Swiss franc.

Until these various monetary uncertainties are resolved, international trade will suffer from corresponding uncertainties. But the shape of the eventual pattern of changed relationships is already beginning to emerge quite clearly.

The rise in the price of German and Dutch goods, in terms of other currencies, will make them less attractive to foreign buyers. Conversely, there will be added incentive for Germany and Holland to buy from abroad.

But the prospective increase in German and Dutch imports is generally expected to stimulate industry there to a fresh pitch of competitiveness. If these countries can reduce their prices, the mark and florin revaluations may be somewhat offset.

Can Afford Price Cuts

Even more significant is the fact that most German manufacturers regard the currency change as an almost deliberate attempt to check their success in export markets. Their reaction in many cases is a determination not to allow the new exchange rates to stand in their way. Many firms already enjoyed a margin over foreign competitors sufficient to allow prices now to be cut by 5% or so, without eating dangerously far into profit margins.

For example, with a new model about to appear, the Volkswagen company is going to be able to make substantial price cuts in marketing the old model—and can still count on finding substantial sales opportunities for it. Much the same is true of a wide range of machinery and other equipment produced in Germany.

It could well be that the revaluation of the mark will not produce any dramatic reversal of



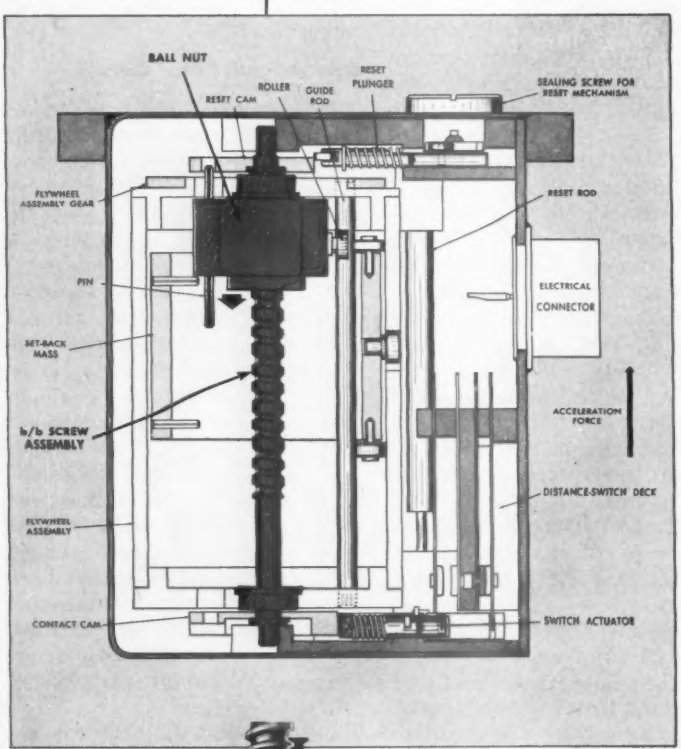
Leonard B. Rist, Economic Director, International Bank for Reconstruction and Development

European Economy Strong in 1961

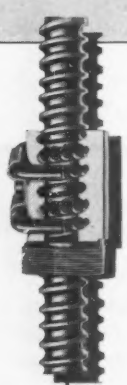
"While the recession presently under way in the U.S. and Canada is likely to affect foreign sales to North America, the internal strength achieved in other industrialized countries may result in a further domestic expansion during 1961." So says Leonard B. Rist, economic director of the International Bank for Reconstruction and Development. He adds that "the boom in Europe is expected to continue—although, overall, at a less bullish rate than in 1960."

When the Bird's on the wing

SAGINAW b/b SCREW HELPS INTEGRATE TIME AND DISTANCE FROM 2 TO 50 G's



Courtesy Integrated Dynamics Div., Globe Industries, Inc.



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Saginaw Ball Bearing Screw

Saginaw Ball Bearing Screws are highly efficient whether they are driving or being driven. A unique example is the way Integrated Dynamics Division, Globe Industries, Inc., Albuquerque, New Mexico, uses a b/b Screw.

First, the design problem: Develop a time-delay switching device which integrates the time function with missile's linear travel. The purpose is to safely arm the warhead. A strict "minimum G—time" system may arm a slow bird too soon for adequate protection of our own forces . . . and a fast missile may arrive before the warhead is fused.

Integrated Dynamics developed and builds the mechanical distance switch shown in the functional drawing to the left. The high-efficiency Saginaw b/b Screw is used to convert linear acceleration force into torque. Essentially proportional to the G-force, the torque of the b/b Screw is used to drive the flywheel mass. Flywheel energy, in turn, is used to actuate the arming switch through a cam.

The time required by the ball nut of the Saginaw b/b Screw to travel the length of the screw is also almost directly proportional to applied G-force. Thus, missile travel in distance is effectively integrated into a time delay which arms the warhead within a ± 5% of the desired distance on accelerations between 2 and 50 G's.

The Saginaw b/b Screw runs dry — without lubricants — in this application. Using the same b/b Screw, the switch gives repeatable distance accuracy of one percent. The screw is ground and electropolished to a surface finish of less than 5 microinches. The balls used are only one millimeter in diameter.

Whatever your actuation problem, chances are you can use a Saginaw b/b Screw to do the job efficiently. Why not write Saginaw b/b Screw and Spline Operation, Saginaw Steering Gear Division, General Motors Corporation, Saginaw, Michigan.

the heavy favorable balance that Germany has been running for the last five years. A large section of the country's invisible receipts, notably defence support costs, will rise in step with the mark. While Germany is unlikely to suck in gold and dollars on last year's scale—when 1,661 million dollars and 317 million dollars' worth of gold entered the country—the indications are that it will continue to be a surplus country.

No More Revaluations in '61

Although currency shifts can alter overnight the relation between one country's costs and another, there is unlikely to be any further shifts of this kind during the rest of 1961. This is not to say that the present exchange parities will remain unchanged indefinitely. But any subsequent changes that may appear necessary if the German move proves insufficient will most probably be made in a concerted manner.

Before this comes about (early fall of 1962 seems to be the earliest) the trend of international costs will continue to show alterations. Buyers should follow these trends closely with a view to shifting supply sources if necessary. Now that many countries have carried through far-reaching liberalization of import policies, reliance on foreign suppliers is safer than it was previously.

The recent acceptance of Article 8 of the International Monetary Fund by most of the West European countries means that they no can longer impose import restrictions for balance of payment reasons without the prior consent of the Fund. This voluntary renunciation of an important degree of national sovereignty will assist the rapid growth of trade between European countries and will encourage a greater emphasis on specialization. These, in turn, will both accelerate industrial growth in the member countries of the area and also encourage greater competitiveness in export markets, both inside Europe and beyond.

Some Costs Rising

The increase in European trade is expected to take place in spite of the split into two trade blocs. Observers feel that the promotion of efficiency now underway in Europe is not being notably hampered by the continued division between the Common Market group of countries and the seven members of the Free Trade Association.

Recently, some elements of costs have been climbing quite rapidly in Europe. Between the beginning of 1960 and the end of 1961 the advance in German wages is estimated to be around 20% with similar, though smaller, advances occurring in many other countries too.

However, raw material costs remain almost stable, and such advances as have occurred in fuel and transport expenses have been comfortably absorbed by the growth of productivity. Thus in spite of the rapid rise in wages, overall costs and selling prices will show comparatively little increase.

Therefore, in such industries as plastics, artificial and synthetic textiles, chemicals, and pharmaceuticals, European prices could become more closely competitive with domestic American levels. One exception, following the recent price fixing disclosures, is heavy electrical equipment.

For the future, then, this is the outlook: German prices may not rise to the full extent of the revaluation, but Dutch quotations are more likely to—thereby pricing out some of the assembly operations currently performed in Holland on behalf of American manufacturers. In other countries, the trend towards greater productive efficiency continues. Any alteration downwards in other European currencies would, of course, enhance the future competitiveness of the countries concerned.

New Products From Europe

Here are a few of the more recent developments in European industry:

Precision Altimeters—Designed for contemporary high-flying, high-speed aircraft, an altimeter has been developed by Kelvin Hughes (England). It essentially consists of two parts which are mechanically separate but electronically connected.

Diamond Paste—A highly-refined grade of diamond paste for polishing and lapping has been announced by Engis (Gabriel's Hill, Maidstone, England). The particles of diamond are four millionths of an inch in diameter—the smallest yet made. The paste will polish semi-conducting materials and hard ceramics, as well as coal for metallurgical examination.

Curtain Fabric—A curtain fabric of glass fibre is being produced by United Merchants & Manufacturers U.K. Ltd. (26 Great Portland Street, London, W.1, England). The fabric does not stretch, shrink, fade, or need ironing. It is fireproof and capable of being washed, dried, and rehung in seven minutes.

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Defense Dept. to Save $5 Million with Computers

A system using computers to analyze the bids of suppliers competing to sell jet fuel to the Department of Defense is expected to save nearly $5 million of the annual $400 million purchase cost.

The automatic data processing system takes less than a day to process bids to the Military Petroleum Supply Agency (MPSA) for six months' supply of fuel or two billion gallons. (MPSA is the single manager under Navy direction for procurement, distribution, and standardization of petroleum products for the armed services.)

Here's how the system works: a high-speed digital computer is given a giant puzzle involving over 500 complex inter-related bids from 95 oil companies. It also considers the needs of 300 military users, legal restrictions, physical conditions, and the shipping routes from each bidder to each destination.

All on its own, the computer then performs over 500 million calculations and produces the plan that is cheapest to the government. It also prints out reports which show the awards to be made, the base to which each batch of fuel is to be shipped, and the exact shipping routes—including all transfer points and the various methods of shipment.

Extensive Tests Held

Before the new system was put into use, it underwent extensive tests. Mathematicians and operations research analysts of the Navy Management Office and MPSA found they would save 1¼% over traditional methods of analyzing bids. With a $400 million annual purchase volume for jet fuel, the Defense Department anticipates savings of around $5 million a year.

See Steel Inventory Reduction at an End

The steel "inventory decumulation is at an end," says Fred J. Robbins, president of Bliss & Laughlin. He points out that new orders during the week of March 12th were higher than in any week during the past 14 months and topped the preceding week in March by 20% to 24%.

The B&L president said that steel consumers are demanding that warehouses keep a good part of their inventories. He added that the warehouses are, in turn, passing the buck to the mills.

In line with this statement, Robbins announced that Bliss & Laughlin is closing its Chicago warehouse service and liquidating the property and inventory. The company had operated the warehouse, its only one, for more than 40 years.

Warehouse Shipments Gaining

"We feel it better to concentrate directly on our steel service center customers," Robbins said, "rather than divert a portion of our activities to our own warehouse facility." Last year, B&L's shipments to steel service centers showed a higher percentage gain of total shipments than in any previous year.

Currently, lead time for B&L steel is about three weeks, which is higher than a month ago. Robbins said that lead time could rise to six weeks in the second quarter of 1961, when operations in metalworking plants are increased.

The company plans to open a new plant this year. Three areas are now under investigation for possible plant locations, Robbins said.

When Labor Contracts Expire

April

Industry	Company	Union
Chemicals	Stauffer Chemical	UMW
Food	Associated Milk Dealers	Teamsters
"	Kellogg Co.	AFGM
Foundries	Chicago Foundrymen's Assoc.	IMFW
Lumber	Minnesota & Ontario Paper	IWA
Petroleum	Tidewater Oil	OCAW
Retailing	R. H. Macy	RWDSE
Rubber	Firestone Tire & Rubber	URW
"	Goodyear Tire & Rubber	URW

May

Industry	Company	Union
Apparel	Cluet Peabody	ACWA
Chemicals	Seiberling Rubber	URW
Instruments	Sperry Rand	IUE
Machinery	Otis Elevator	IUE
Paper	International Paper	Papermakers
Petroleum	American Oil	OCAW
Rubber	United States Rubber	URW
Textiles	Dan River Mills	UTWA
Transportation Equipment	Bell Aerospace	UAW
Utilities	Niagara Mohawk Power	IBEW





your product's reputation and sales... can go down hill fast

... *if nuts keep coming loose*

Suppose you were your own customer, and bought the product *you* make. You'd expect it to stand up to the job, whether it was a racing cart, a heavy-duty crawler, or a crusher. You'd want it to endure the bumps and thumps and constant vibration of rugged use without coming unstuck at the bolts. If a nut came loose and made you lose time or production, you'd certainly think twice about buying that product again.

This is precisely why so many of America's leading manufacturers have guaranteed the reliability of critical bolted connections on their products with Elastic Stop® nuts.

They know that a product's reputation for dependability is built in the field and they know that reorders are written in customers' maintenance records. They've verified through field experience that in the long run Elastic Stop nuts pay their own way because the exclusive nylon locking inserts keep them from working loose . . . even under the most punishing conditions of shock, impact or vibration! Elastic Stop nuts are the equivalent of "free" insurance against fastener failure for *their* product!

Whether your product sells for three dollars or for thousands, we think you'll be interested in a copy of the hex nut catalog No. 706. It details the regular, thin, heavy and light hex types in USS and SAE thread series and various materials and finishes; plus many dimensional "specials".

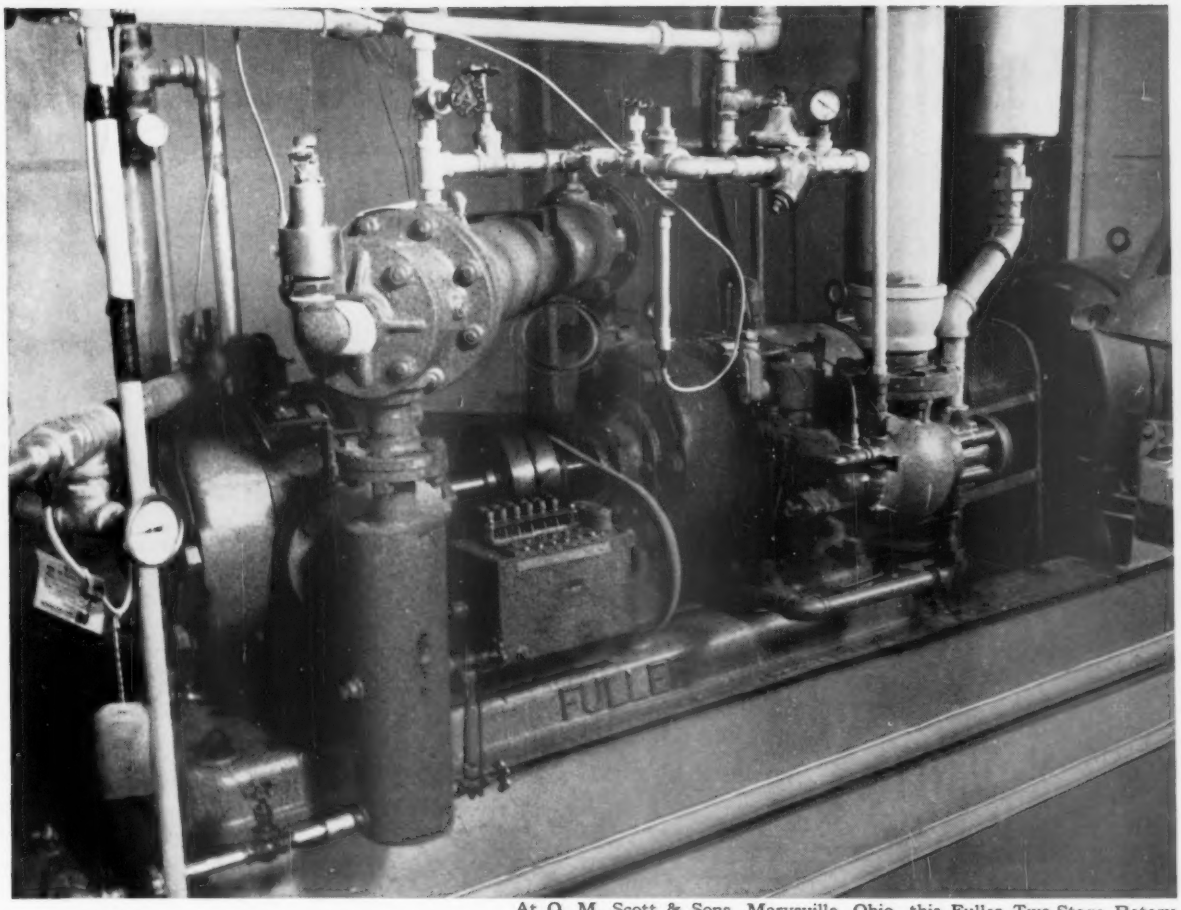
ESNA's complete line may change many of *your* "special" requirements into standard parts. Write Dept. S52-415, Elastic Stop Nut Corporation of America, 2330 Vauxhall Road, Union, New Jersey.



for the ring **O** *of reliability*

ELASTIC STOP NUT CORPORATION OF AMERICA

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At O. M. Scott & Sons, Marysville, Ohio, this Fuller Two-Stage Rotary Compressor with overhead intercooler and 60 hp motor has operated 24 hours a day straight through for one year, without downtime or maintenance.

No Air Starvation with a Fuller Compressor in the Packhouse

Maintenance Supervisor Alfred Asman of O. M. Scott & Sons, Marysville, Ohio, has high praise for their Fuller compressor: "Before we had the Fuller, we regularly had complaints of low air pressure. Since the Fuller is supplying all the packhouse air requirements, no one has complained of lack of air."

Their Fuller Rotary Two-Stage Compressor unit with overhead intercooler, producing 281 cfm, 100 lb. gage discharge pressure, has operated 24 hours a day straight through for one year—without even a sign of blade or bearing wear.

Reliable performance and dependable delivery of air, when and where needed, is only part of the story. Scott & Sons, along with others using Fuller Rotary Compressors, know that only minor maintenance of parts is all that is necessary for years to come—creating savings in labor, downtime and materials.

The key is Fuller's rotary principle which permits a design completely free of reciprocating parts. Elimination of valves, crankshafts, pistons and other moving parts cuts the need for attention, adjustment and replacement. Blades are "held" to cylinder wall by centrifugal force—automatically compensating for wear—thus maintaining new machine efficiency.

What's more, compact, easily installed Fuller Rotary Compressors are vibration-free, further reducing costs by eliminating the need for involved and expensive foundations.

A Fuller specialist will gladly discuss your compressor needs and suggest a system geared exactly to your specific situation. Write for Bulletin C5-A today or contact Fuller on your plant requirements.

2561
C360

"See Chemical Engineering Catalog for further details and specifications."

FULLER COMPANY GENERAL AMERICAN TRADE MARK

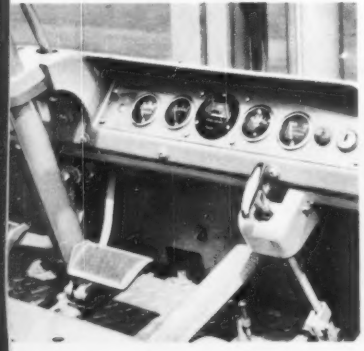
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Subsidiary of General American Transportation Corporation
Offices in Principal Cities Throughout the World

Fuller
...pioneers in harnessing AIR

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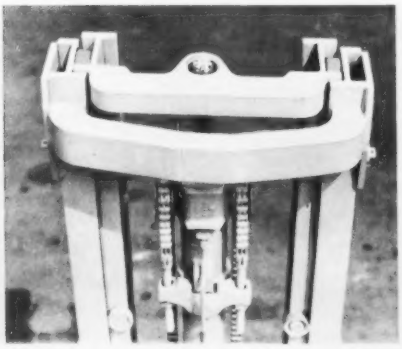
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Double I-beam on mast affords greater strength and stability, and less deflection. Exclusive side thrust rollers for mast and carriage assure frictionless lifting action at all times.





YALE OFFERS: FIRST COMPACT GAS LIFT TRUCKS

• Solid or pneumatic-tired • 3000, 4000, 5000 lb. capacity • Gasoline or LP-Gas powered • 52 HP engine in solid-tired model, 72 HP engine in pneumatic-tired model • New, improved automatic torque transmission.

You get compactness and speed for faster, safer operation cycle from the Yale G54 series gas trucks. Lifting is a job the Yale Compact does fast . . . from 75 to 80 FPM. Its controlled lowering speed ranges from 55 to 80 FPM. You have full lifting speed at all times, plus increased pump life, assured by the patented super-charged hydraulic tank. You easily adjust the exclusive mechanical inching control to your individual operational requirements. What's more, Yale Compact offers you greater safety, with self-energizing, self-adjusting brakes and wheels. Operation is easier and more efficient. You operate all hydraulic attachments of the Yale Compact with only one exclusive, multi-function control handle.

Flexible lease and finance plans are available to put this truck to work for you immediately.

Yale Materials Handling Division, Dept. G-102, Phila. 15.
A Division of The Yale & Towne Manufacturing Company.

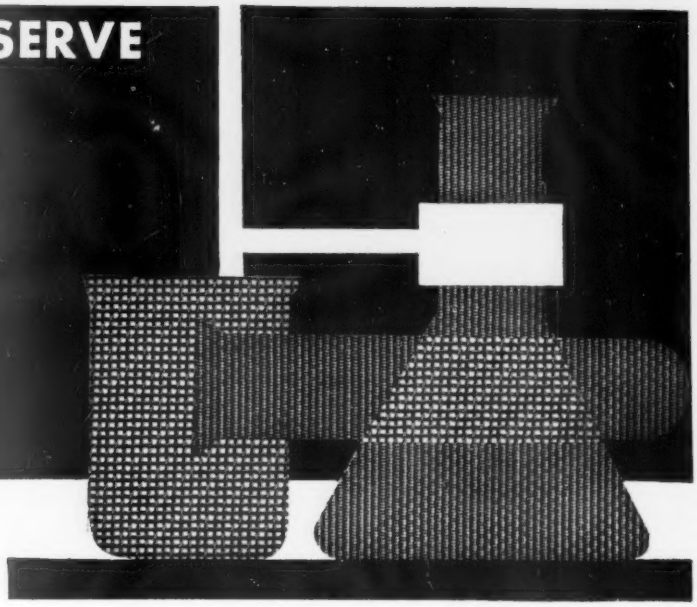
Safe ride and shock reduction, better stability, and a self-righting effect come from Yale's new steering axle design. Steering axle mounts on two 2" diameter articulating pins.



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This is Cambridge Wire Cloth Quality.

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Prompt answers to mail or phone inquiries. Experienced Field Engineers—experts in their field—who can help you select the wire cloth to do the best job at lowest cost. Prompt deliveries. Large stocks of frequently used cloth for immediate shipment. Follow-up service to see that our product is giving you the results you want.

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Your Cambridge Field Engineer can show you how Cambridge quality and service can help you in your operation. Call him at any time. He's listed in the Yellow Pages under "Wire Cloth". Or, write direct for illustrated 120-page catalog.



Refer to our technical data sheet in CHEMICAL ENGINEERING CATALOG, Page 185.

The Cambridge Wire Cloth Co.

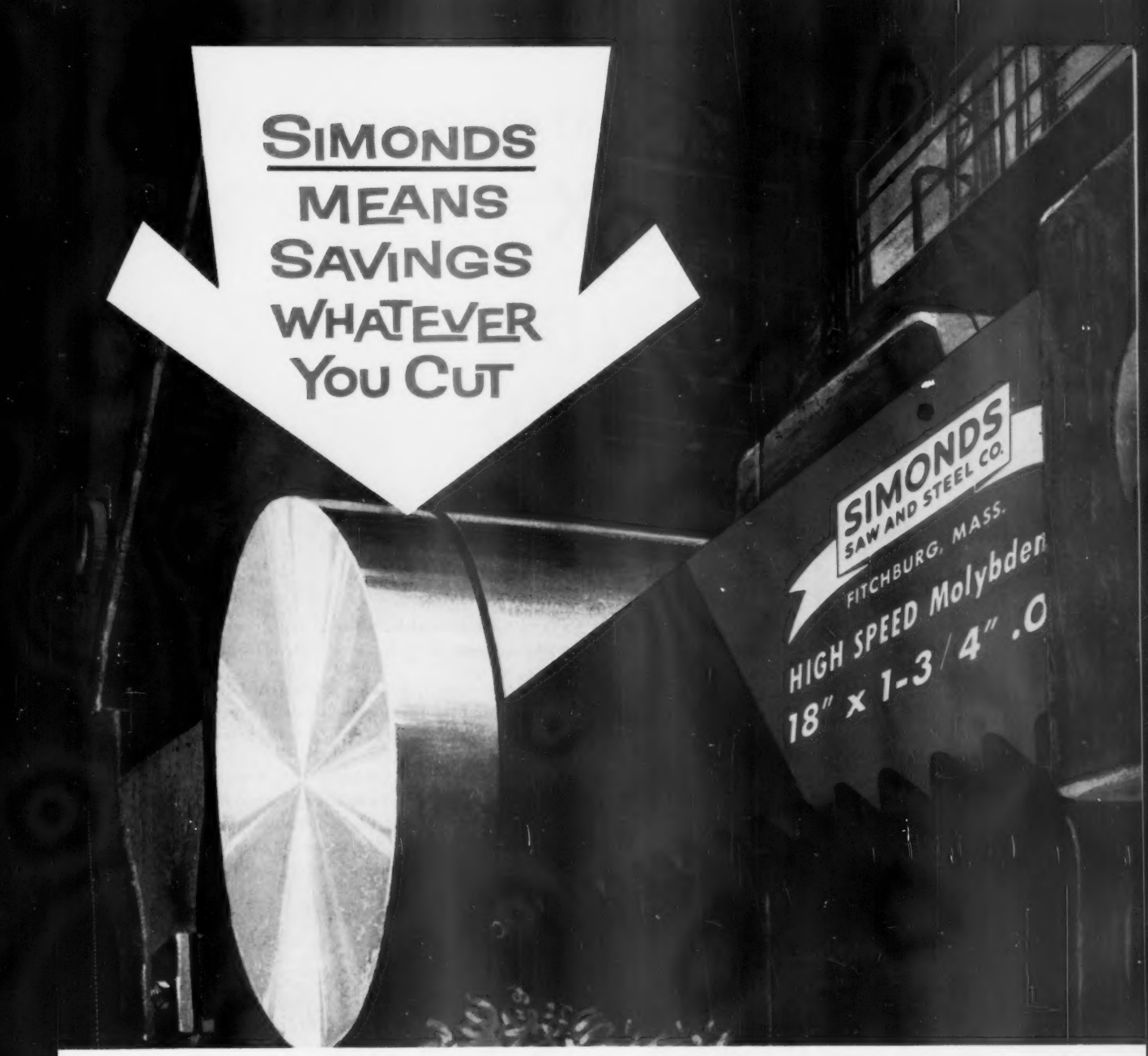
Department R • Cambridge 4, Maryland

Manufacturers of Metal-Mesh Conveyor Belts, Flat Wire Conveyor Belts, Wire Cloth, Wire Cloth Fabrications and Gripper ® Metal-Mesh Slings.

For More Facts Write No. 174 on Information Card—Page 32

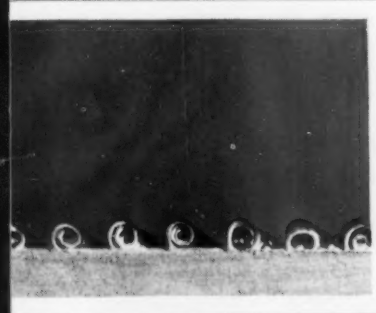
For More Facts About Ad on Facing Page Write in No. 175→

SIMONDS MEANS SAVINGS WHATEVER YOU CUT



"Ups" your cut-off capacity . . .

SIMONDS "RED END" Hacksaw Blades



Simonds tough, edge-holding "Red End" Blades don't hack at metal, but cut curled chips like the cutting tool on a lathe. Made to rigid, high quality standards, they have greater resistance to breakage . . . step up your cut-off capacity.

Longer wearing, too, Simonds own unique cross-rolled steel and special heat treatment add many valuable hours of cutting life to every blade . . . provide important savings all along the line.

Simonds "Red End" Power Blades come in All-Hard and Shatter-proof types in all standard lengths, thicknesses and tooth spacings. Three types of Hand Blades are available in all standard specifications . . . insure a "right" blade for every need.

Get off-the-shelf delivery from your local Simonds Distributor . . . start saving today.

SIMONDS
SAW AND STEEL CO.
FITCHBURG, MASSACHUSETTS

Buy through your local Simonds Distributor for TRIPLE-S SERVICE — Local Stocks – Local Speed – Local Skill

Factory Branches in Union, N. J., Chicago, Shreveport, La., Los Angeles, San Francisco, Portland, Ore. • Canadian Factory in Granby, Que. • Simonds Divisions: Simonds Steel Mill, Lockport, N.Y.; Heller Tool Co., Newcomerstown, Ohio; Simonds Abrasive Co., Philadelphia, Pa. and Arvida, Que., Can.

TO INSURE SUCCESSFUL PERFORMANCE

EVERY GRAMIX® PART IS

(PRODUCTS OF POWDER METALLURGY)

APPLICATION ENGINEERED

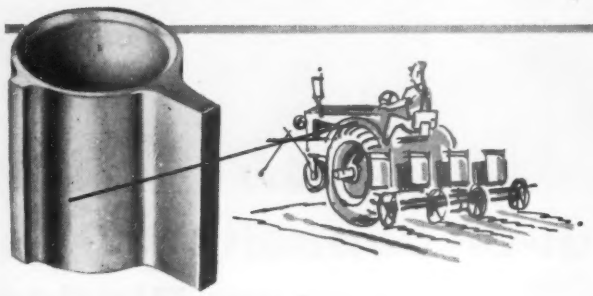


One of the most important factors to consider when purchasing powder metal parts is that of successful part performance; for a part to successfully perform its job, all of its physical and metallurgical characteristics must be suited to the application.

GRAMIX Products of Powder Metallurgy are always *Application Engineered,* which means product is specially matched to each specific application. From an almost unlimited variety of metal mixtures, one alloy is blended that contains the required properties and characteristics of the finished part; *all* aspects of part design and conditions under which it must operate are taken into account. Only then is the GRAMIX part produced.

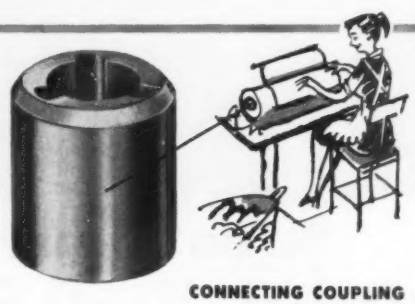
Eight of these *Application Engineered* GRAMIX parts are shown here. Each precisely suits the requirements of its job . . . each is the best part available for the job.

When you specify a GRAMIX part, you can always be sure that it has been *Application Engineered* for successful performance, long life and complete reliability. For more information on *Application Engineered* GRAMIX parts, write for Engineering Handbook G-55.



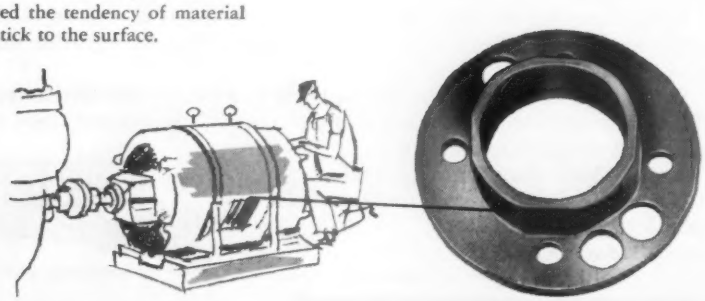
CORN SEEDER

GRAMIX was the material specified for this corn seeder part because the surface finish obtainable with the alloy used reduced the tendency of material to stick to the surface.



CONNECTING COUPLING

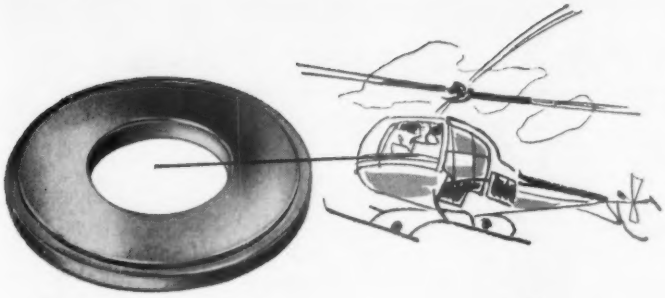
The connecting coupling employed in a small home ironer is formed from a special GRAMIX hardened steel alloy; it offers low wear and shock resistance.



CONTAINER COVER END CAP

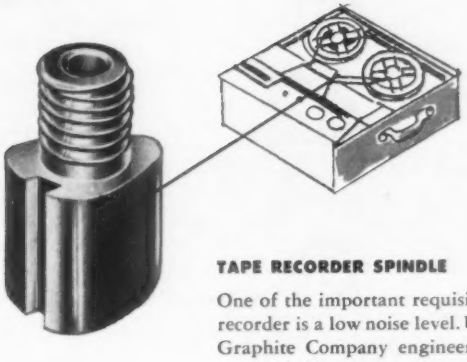
Great savings were realized when retainer caps for certain types of electric motors were made of GRAMIX.

This process made it simple and economical to mold the multiple holes to precise tolerances without extra operations.



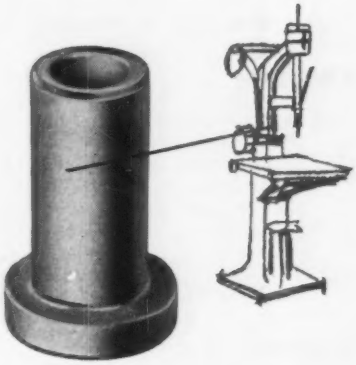
HELICOPTER THRUST WASHER

The outstanding features of the GRAMIX alloy specified for this thrust washer are a dependable and consistent friction and wear pattern as well as a fine surface finish.



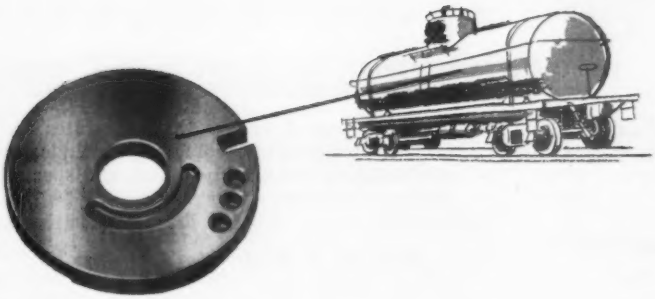
TAPE RECORDER SPINDLE

One of the important requisites in a tape recorder is a low noise level. United States Graphite Company engineers developed a special alloy to meet these requirements in the GRAMIX spindle.



GUIDE BEARING

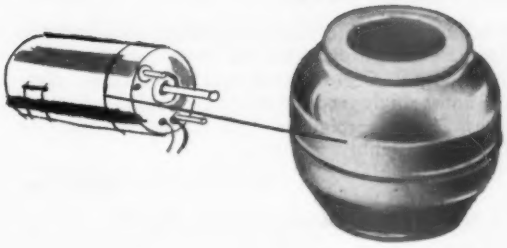
Built-in lubrication and low friction to reduce heat are important features of the GRAMIX alloy chosen for this guide bearing.



LIQUID PUMP END PLATE

This end plate is typical of many parts employed in liquid pumps of many types.

It is made from a wear resistant bronze alloy that was developed for pump applications.



FRACTIONAL H.P. MOTOR

The GRAMIX bearing for this Fractional h.p. motor was developed from a special low noise level alloy.

Its self-lubricating properties were also an important consideration in specifying GRAMIX.

METAL POWDER mpi INDUSTRIES FEDERATION

X-296-2

THE UNITED STATES GRAPHITE COMPANY

DIVISION OF THE WICKES CORPORATION, SAGINAW 15, MICHIGAN

GRAPHITAR® CARBON-GRAPHITE • GRAMIX® POWDER METALLURGY • MEXICAN® GRAPHITE PRODUCTS • USG® BRUSHES

For More Facts Write No. 176 on Information Card—Page 32

Information For Your Catalog Files

BEVEL GEARS

A catalog describing and illustrating spiral bevel gears. Discusses specifications and standards. Shows how the gears can be used for gear boxes and special drives, including straight and right or left hand.

Perkins Machine and Gear Company

Write No. 1 on Information Card—Page 32

COUPLERS

A 20-page catalog on automatic and regular quick detachable couplers. Tells where each type is most economically used in handling air, oil, or grease. Shows practical applications of couplers, fittings, and hose with various air-operated tools and fixtures.

Foster Manufacturing Company, Inc.

Write No. 2 on Information Card—Page 32

ELECTRIC TOOLS

A 32-page bulletin on high frequency electrical tools. Catalog 62 covers a complete line including grinders, sanders, polishers, screwdrivers, nutsetters, drills, reamers, and balancers.

Thor Power Tool Company

Write No. 3 on Information Card—Page 32

FLUORESCENT BALLASTS

Bulletin GEA-6912 lists features and advantages of fluorescent lamp ballasts. The four-page publication describes how hazards to people and property are eliminated. Includes types of ballast ratings and dimensions.

General Electric Company

Write No. 4 on Information Card—Page 32

INDUSTRIAL COUNTERS

Catalog #200 includes information and prices on industrial counters. The eight-page bulletin lists models according to actuating methods: stroke, revolution, etc. Model variations are also included.

Durant Manufacturing Company

Write No. 5 on Information Card—Page 32

INSERTS

Bulletin #765 covers proper procedures for drilling and tapping aluminum, magnesium, steel, and thermoplastics to receive inserts. Treats proper selection of tap and class of fit. Includes a nomograph to help determine tapping speed and lubricant for a given size thread in a wide range of materials.

Heli-Coil Corporation

Write No. 6 on Information Card—Page 32

MINIATURE BEARINGS

Catalog 3E illustrates and describes standard miniature bearings. The 16-page bulletin gives dimensional data and actual size drawings. Covers radial pivot, miniature roller, and special type bearings.

Landis & Gyr, Inc.

Write No. 7 on Information Card—Page 32

MOTORDRIVES

Catalog G-100 covers motordrives—self-contained variable speed drive units. The 88-page publication includes full rating tables, dimension diagrams, and charts. Describes new higher overhung load and controls.

Reliance Electric and Engineering Company

Write No. 8 on Information Card—Page 32

MOTORS (FRACTIONAL HORSEPOWER)

Bulletin PL-SB 2820 gives prices, information on fractional horsepower motors. The six-page publication covers over 500 different general and special purpose motors.

Westinghouse Electric Corporation

Write No. 9 on Information Card—Page 32

MOTORS (INTEGRAL)

An eight-page brochure that illustrates and describes aluminum integral motors. Includes specification tables, availability tables, and special construction features.

Franklin Electric Co., Inc.

Write No. 10 on Information Card—Page 32

MOTORS (WORM GEAR)

Brochure F-1971 contains technical data, feature illustrations, and descriptions of right-angle worm gear motors. Gives rating and dimensional data for both single reduction and double reduction types. Shows specialized models, optional mounting, and assembly positions.

U. S. Electrical Motors Inc.

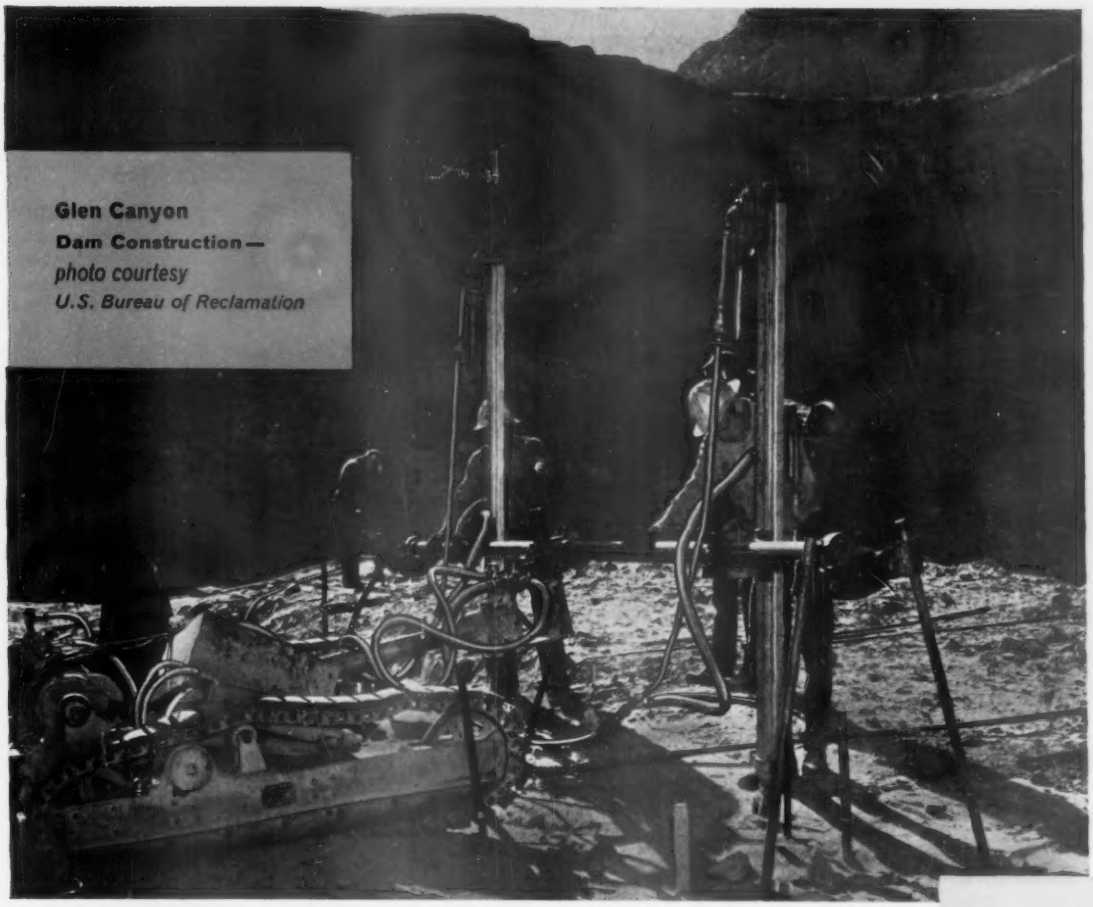
Write No. 11 on Information Card—Page 32

NUTS

A four-page folder on self-locking swage nuts. Provides detailed specifications, installation data, and performance information. Illustrations help explain the swaging principle and the three-point locking action of the nut.

Standard Pressed Steel Co.

Write No. 12 on Information Card—Page 32



Glen Canyon Dam Construction— *photo courtesy U.S. Bureau of Reclamation*

Gates Hose moves mountains... keeps production going in industrial plants

Wherever hose is used, on construction projects or in industrial plants, you find Gates Hose giving outstanding service. Gates makes a hose for every industrial application—air hose, water hose, steam hose, suction hose—every type of industrial hose in a full range of sizes. All are dependable, top-quality products of Gates continuing program of *Specialized* Research.

You get fast delivery from local stocks. The hundreds of Gates Distributors, located in all parts of the country and throughout the world, have large stocks of hose on hand, backed by Gates servicing warehouses in every major industrial center.

This means that you always get quick delivery of Gates Industrial Hose from a local source.

Call your nearby Gates Distributor when you need hose of any kind, for any purpose.

The Gates Rubber Company, Denver, Colorado BP 21A

GATES 18HB PREMIUM QUALITY AIR DRILL HOSE

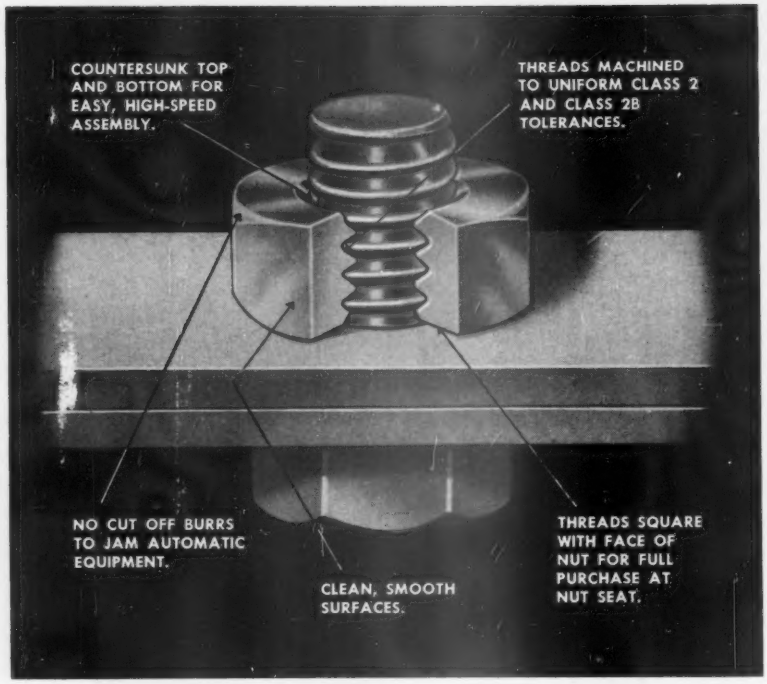
is used on most major construction projects. Highly resistant to abrasion, it is also flexible and easy to handle. It gives exceptional performance and long service on all light and heavy duty air drill applications under the most severe conditions.





Gates Industrial Hose

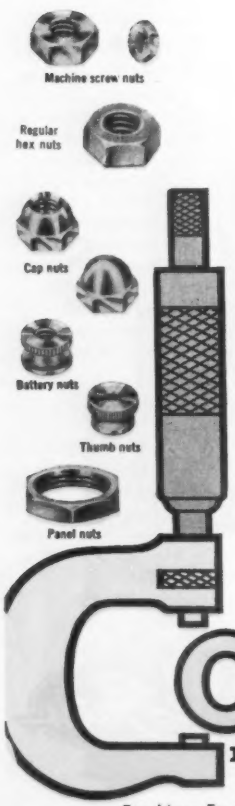
For More Facts Write No. 177 on Information Card—Page 32



CORNELL

"Machined from the Bar" BRASS NUTS

REDUCE ASSEMBLY COSTS



"Machined from the Bar" brass nuts can save you countless production dollars yearly by speeding your assembly operations and reducing downtime and rejects to a minimum. These precision nuts handle easily, spin on smoothly, tighten securely and, once in place, *stay in place.*

We are specialists in *"Machined from the Bar"* brass nuts. *This is our only product.* Our method of manufacture assures that every nut is a precision product held to close tolerances and checked with go and no-go gauges. This uniformity speeds hand operations and permits trouble-free performance of portable and hopper-fed, high-speed nut setters.

Remember, *"Machined from the Bar"* brass nuts are available *at no extra cost.* Standards are available "off the shelf", shipped the same day the order is received.

Call, wire or write today: Gene Carroll, Yonkers 8-9400. Teletype, Yonkers 4356.

Remember . . ."Machined from the Bar" at no extra cost!

PREFERRED BY LEADING MANUFACTURERS

CORNELL MANUFACTURING COMPANY, INC.

14 SAW MILL RIVER ROAD, YONKERS, NEW YORK

For More Facts Write No. 178 on Information Card—Page 32

Catalog Files

TROLLEY CONVEYORS

Book 2730 describes selection and applications of trolley conveyors. Includes examples, photographs, and layout drawings. The 58-page brochure gives tables of materials, dimensions, and specifications.

Link-Belt Company

Write No. 13 on Information Card—Page 32

TRUCKS

A 16-page catalog on narrow aisle electric and hydraulic hand pallet trucks. Illustrated with on-the-job photos. Covers the various models available and the specifications.

Raymond Corporation

Write No. 14 on Information Card—Page 32

TWIST DRILLS

A 98-page catalog covering twist drills. Contains listings of high-speed steel, carbide-tipped solid carbide, and special twist drills. Includes engineering data and a price list.

Brown & Sharpe Mfg. Co.

Write No. 15 on Information Card—Page32

VALVES

A data sheet describing and illustrating bronze gate valves. Graphically portrays the full opening feature of the valve. Bulletin No. 103 covers this "compact" model, designated number 300.

American Valve Manufacturing Co.

Write No. 16 on Information Card—Page 32

VENTILATORS

Bulletin No. 4104 describes direct drive centrifugal roof ventilators. The two-color catalog discusses and illustrates specific design features and operating characteristics. Simplified installation - type drawings are correlated with tabular data.

American-Standard

Write No. 17 on Information Card—Page 32



"I need that shipment tonight! Send it United jet freight."

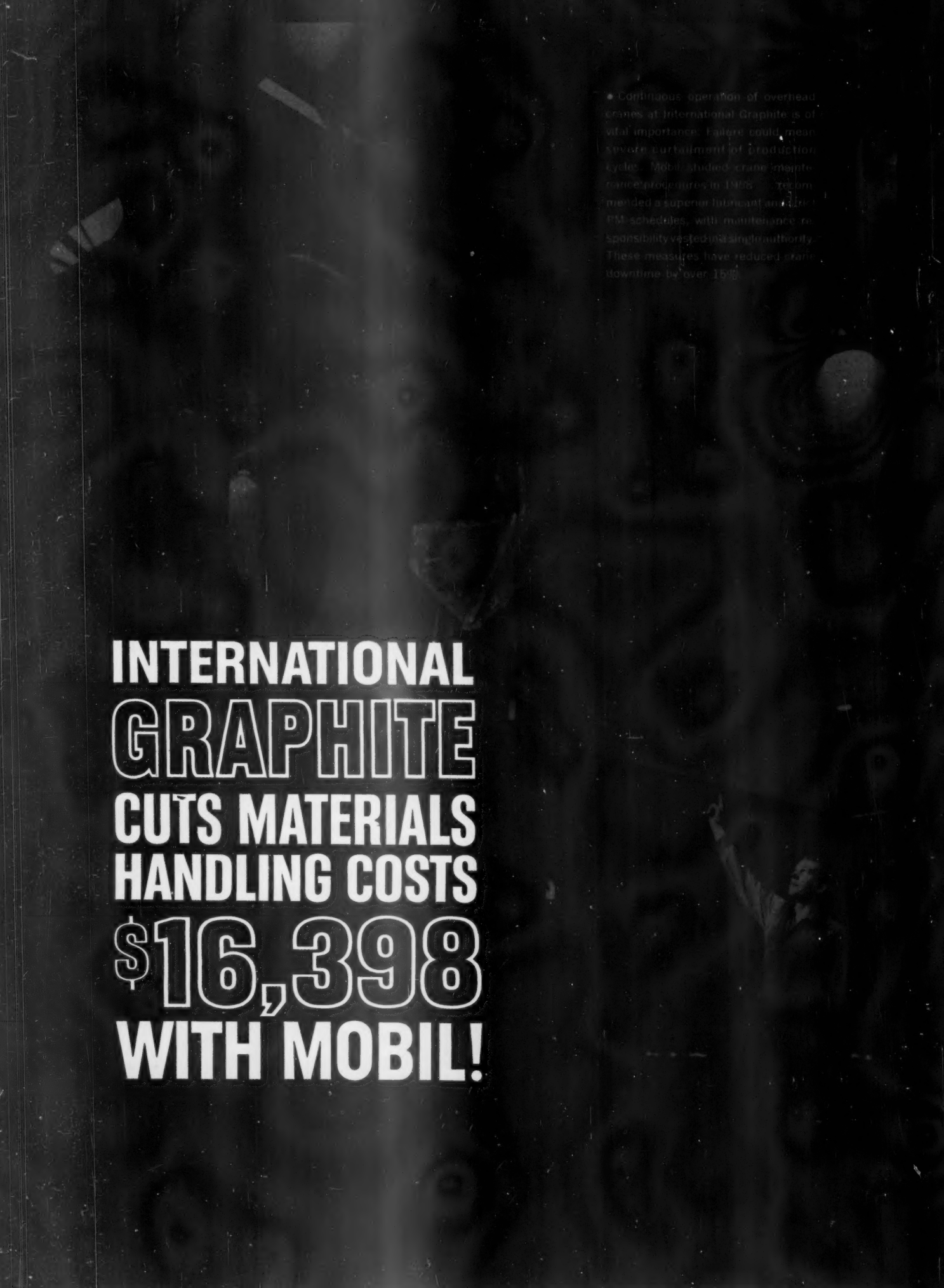
When you need a shipment in a hurry . . . specify United Air Lines jet freight. United jets can span the nation in less than five hours . . . providing same-day delivery to Main Line cities coast to coast.

And United Air Lines' growing jet fleet gives fast, frequent jet freight service to and from more U.S. cities than any other airline.

In addition to carrying freight on every passenger flight, United also serves you with a fleet of fast DC-7 Cargoliners. This total airlift is one reason United is your best choice for fast, dependable delivery of urgently needed shipments. Another: United follows through with your shipment from the moment space is reserved until it's delivered to you.

Next time you need delivery in a hurry . . . have the shipment sent United air freight.

UNITED AIR LINES


• Continuous operation of overhead cranes at International Graphite is of vital importance. Failure could mean severe curtailment of production cycles. Mobil studied crane maintenance procedures in 1975 ... recommended a superior lubricant and effective PM schedules, with maintenance responsibility vested in a single authority. These measures have reduced crane downtime by over 15%.
INTERNATIONAL
GRAPHITE
CUTS MATERIALS
HANDLING COSTS
$16,398
WITH MOBIL!



• In addition to direct savings through use of premium oils and greases, there have been immediate and long-term cost reductions through greater engine efficiency and driver training. Gasoline savings have been particularly impressive. Despite increased plant activity, International Graphite has achieved a 30 month total savings in lower gasoline costs of over $5,692.



• For vehicular materials handling units, Mobil made these recommendations: installation of hour meters; proper use of premium lubricants; servicing on a 50-operating-hour basis (about 2 weeks) rather than on a rigid once-a-week schedule. Air cleaners better suited to the conditions of operation were installed. As a result, scheduled servicings have been reduced by an average of 633 annually. In the past 30 months cost of oil, grease and labor have been reduced $8,206.



• International Graphite's Maintenance Superintendent, Mr. Mel Price, center, reports that there have been substantial savings, too, in the area of motor overhaul. Prior to changes recommended by Mobil in 1958, complete motor overhauls averaged 9 a year on 25 vehicles. During the last 30 months, this has been reduced to an average of 7 a year. Resultant savings in reduced labor and parts costs have amounted to $2,500.

• For over 20 years, Mobil has helped reduce costs for the International Graphite and Electrode Division of Speer Carbon Company, Niagara Falls, New York, a major producer of such finished graphite products as anodes, electrodes, and molds, as well as specialties for the railroad, chemical and munitions industries.

International Graphite faces exceptionally severe maintenance problems because of highly unusual conditions at the plant. Abrasive particles of carbon, sharp sand and silicon-carbide find their way into all types of materials handling equipment, necessitating a heavy schedule of preventive maintenance. By recommending superior lubricants and improved PM techniques, Mobil Engineers have helped International Graphite effect an additional $16,398 reduction in costs of maintaining and operating this equipment during the past 30 months.

Consistently over the years, Mobil has *proved* its value to industry. To learn how Mobil may help you, call your nearest Mobil Representative. Or write, Mobil Oil Company, 150 East 42nd St., New York 17, N. Y.

Mobil

Riegel
POROUS
PAPER
for
choosy filters



It's not an ordinary paper that traps destructive sludge in oil, tiny motes of dust in air, corrosive droplets of moisture in gases . . . these marauders are now stopped in their tracks by "highly educated" Riegel filter papers. Other familiar examples are vacuum cleaner bags, oil filters in your car, hydraulic filters in jet engines and gas aerosol filters to trap atomic fallout. Riegel filter papers are made to highly technical specifications for each job.

Think a moment . . . can a filter improve your machines or processes . . . or solve a problem . . . *at the cost of paper?* Riegel has over 600 papers to serve industry in *products*, in *production*, in *packaging*. Write Riegel today describing your need.

TECHNICAL ADVISORY SERVICE
RIEGEL PAPER CORPORATION
BOX 250, NEW YORK 16, N. Y.

For More Facts Write No. 181
on Information Card—Page 32

Letters To The Editor

BASIC ECONOMICS

Dear Sir:

I am interested in obtaining the titles of several basic economic books that I might read and study which will broaden my knowledge in the field of purchasing.

I am 25 years old and currently employed as an expediting clerk and assistant buyer. I have one year of college, but no background in economics.

Gene Thompson
Oil Well Supply Division
United States Steel Corp.
Garland, Texas

• *Probably the best book on basic economics is a text written by Dr. Paul Samuelson. It is entitled "Economic Principles" and is available from the McGraw-Hill Book Company, 330 West 42nd Street, New York, N. Y. The study of purchasing would not be complete without Stuart Heinritz' classic text "Purchasing". Prentice-Hall, Inc., 70 Fifth Ave., New York, N. Y. is the publisher.*

CONTROL OF INVENTORY

Dear Sir:

In your article "Is The Slump Ending?" by Executive Editor Dean Ammer in the February 13 issue—as well as several other articles in past issues— the impression is given that the purchasing agent is solely responsible for all phases of inventories.

I recognize that this is a magazine directed to the P.A., but it is also a good magazine and widely read by persons other than the P.A. I am familiar with a large number of companies and quite honestly the purchasing agent doesn't even know the total dollar value in inventory.

Can you explain why and give a list of the companies where the P.A. is responsible for inventory?

I would be the first to admit that the P.A. plays an important role in controlling inventories. But, without the production and inventory control department advising purchasing when to buy, how much to buy, and when it is required, there would be very few companies still in business today.

Keep up the good work and interesting articles; but, please give a little credit where credit is due.

M. A. Cunningham
Inventory Control Manager
Clark Bros. Co.
Olean, New York

• *Mr. Cunningham is quite right in pointing out that inventory management in most companies is a joint decision, with primary responsibility resting in the production and inventory control departments. A recent study by the American Management Association (Research Report #45) shows that purchasing executives determine inventory levels in 38% of the companies represented in the survey. These results agree with a study made by the National Industrial Conference Board about 13 years ago. However, we certainly agree with Mr. Cunningham that this role of the purchasing agent is no less vital than the role of others and we are sorry if we were misleading.*

TRANSPORTATION WOES

Dear Sir:

I read with great interest two articles which appeared in the February 13 issue: "Can You Analyze Transportation Values" by Thomas Dillon and the legal article by Albert Gray, "What You Should Know About F.O.B."

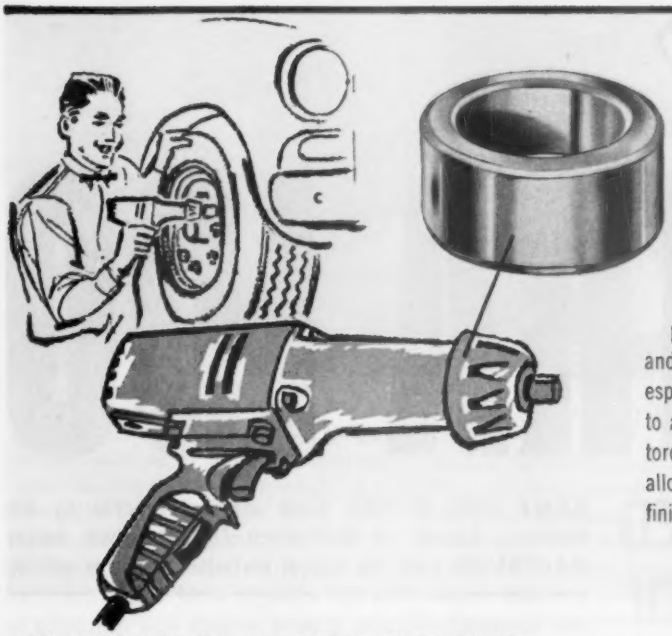
Both are very timely in that we have had problems involving the transportation of material by our vendors. I would like to add that I find PURCHASING Magazine very informative and interesting.

W. O. Spriggs
Servonics, Inc.
Alexandria, Virginia

• *Another of our popular transportation articles appears on p. 78 of this issue. Subject is the function of shippers' associations.*

600 SERIES

THE FORGEABLE BEARING ALLOYS THAT STAND UP ON THE REALLY TOUGH JOBS!

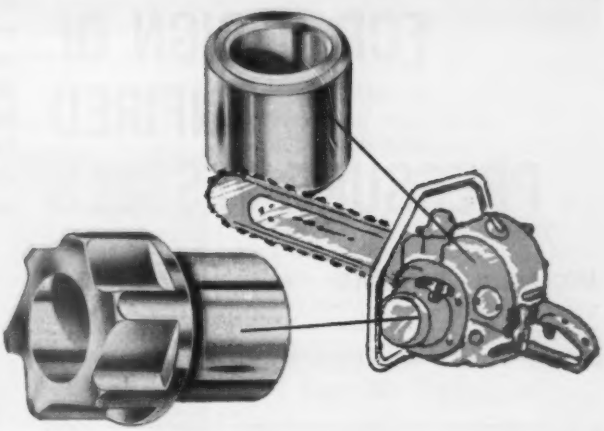


600 ALLOY NOSE BEARING WITHSTANDS THE PUNISHING SHOCK LOADS OF AN IMPACT WRENCH

This heavy-duty impact wrench takes the rigorous punishment of hard industrial use right on the nose . . . and right on the 600 Series nose bearing. This bearing was especially chosen by the manufacturer because of its ability to absorb a range of 1600 to 1800 impacts per minute at a torque of from 0 to 250 foot pounds. By specifying 600 bearing alloy, the manufacturer gets superior performance from his finished product.

600 ALLOY RATCHET AND DRIVE GEAR BEARING TAKES THE TERRIFIC POUNDING OF A HIGH POWERED CHAIN SAW

Professional woodcutters give chain saws a rough time for hours on end, all year round, and these rugged saws must be built to take punishment. With chain speeds up to 3000 feet per minute, the ratchet and drive gear bearings, for example, must have a very high strength, hardness and good resistance to wear with minimum lubrication. That's why 600 Series Alloy was specified for both parts . . . the ratchet is a forging and the bearing was produced from 600 Series rod.



MUELLER BRASS CO. SPECIALIZES IN ALLOYS FOR DIFFICULT APPLICATIONS

For complete engineering data, write today for Special Alloys Kit No. 13.



The alloys available from the Mueller Brass Co. range from those having high hardness and wear properties, to alloys that must possess excellent electrical conductivity, and ones that must have free-machining properties. Let our engineers help you select the alloy best suited to your exact application.

MUELLER BRASS CO. PORT HURON 30, MICHIGAN

326

For More Facts Write No. 182 on Information Card—Page 32



N-A-XTRA 100

NOW CODE-APPROVED FOR DESIGN OF UNFIRED PRESSURE VESSELS

A.S.M.E. CASE NO. 1297. Code approval granted by the American Society of Mechanical Engineers now makes N-A-XTRA 100 steel the logical material for use in unfired pressure vessels. This high-strength steel is fully quenched and tempered—permits greater savings and efficiency in fabrication, erection, handling, welding and shipping. Its high strength/weight ratio cuts dead weight. It cold forms readily, welds under constrained conditions without underbead cracking. These benefits are the result of the outstanding characteristics of N-A-XTRA 100 . . .

MECHANICAL PROPERTIES

Tensile Strength, psi	115/135,000
Yield Strength, psi	100,000 min.
Notch toughness at exceptionally low temperatures	

CHEMICAL COMPOSITION

Carbon	.15/.20
Manganese	.80/1.10
Phosphorus, max.	.035
Sulphur, max.	.040
Silicon	.50/.80
Chromium	.50/.80
Molybdenum	.18/.28
Zirconium	.05/.15

Make a note now. For larger, stronger or lighter pressure vessels —from mobile tankers to stationary storage tanks—specify code-approved N-A-XTRA 100.

Great Lakes Steel Corporation
Product Development, Dept. PM-6
P. O. Box 7310
Detroit 2, Michigan

Please send me complete copy of the A.S.M.E. Code Case No. 1297.

NAME _____

FIRM _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

GREAT LAKES STEEL

DETROIT 29, MICHIGAN

Great Lakes Steel is a division of

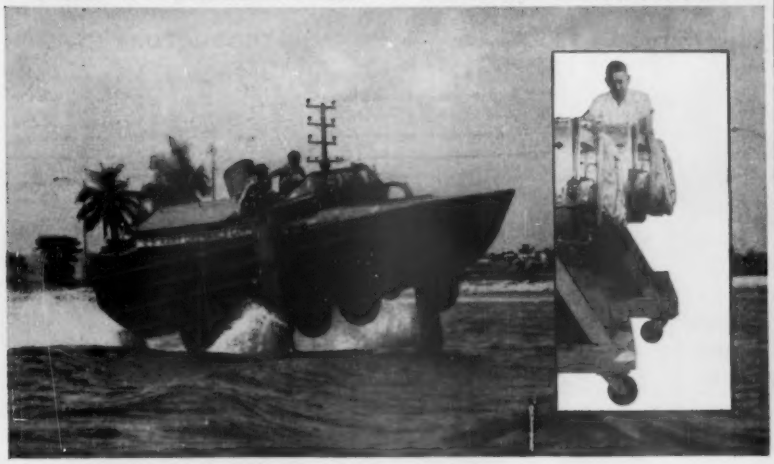
NATIONAL STEEL CORPORATION

For More Facts Write No. 183 on Information Card—Page 32

MATERIALS-HANDLING NEWS

NEW AND UNUSUAL APPLICATIONS OF BASSICK CASTERS THAT MIGHT BE ADAPTED TO YOUR HANDLING PROBLEMS

"DUCK" GETS A LIFT FROM BASSICK'S

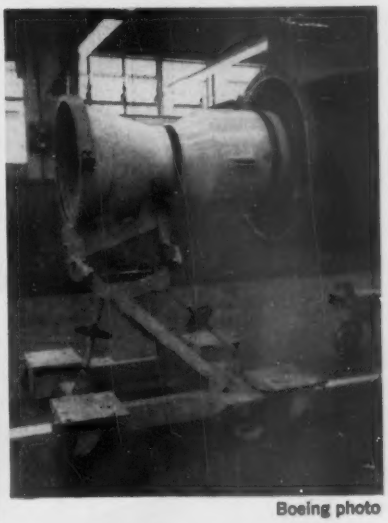


Here's a boat that rides on stilts.

It's the U.S. Army's "Flying Duck" that attains speeds up to 50 miles an hour on hydrofoil wings that hold it suspended several feet above the water.

But, new vehicle, old materials-handling problem—solved by Bassick: The "Flying Duck's" high-powered T53 gas turbine engine, made by Avco Corporation's Lycoming Division, moves down the production line on heavy-duty Bassick "S99" casters.

Made of extra-heavy-gauge steel, formed in Bassick's 300-ton presses and with full double-race ball-bearing swivels, "S99" casters are built to take production-line abuse on power-pulled draglines, dollies, assembly fixtures at all manual speeds. They're especially recommended for warehouse draglines, too.



Boeing photo

CASTERS SPEED "BOMARC" ASSEMBLY

Part of America's first line of defense is the U.S. Air Force "Bomarc" supersonic area-defense missile, made by Boeing Airplane Company, Seattle, Washington.

This behind-the-scenes picture shows how Bassick casters aid installation of Bomarc's vital tail-pipe assembly.

Casters used here: Popular "H99" on the dolly in the background—the largest-selling high-quality truck caster on the market; and Bassick's heavy-duty "S99" in the background, supporting main missile structure. Bassick positioning jacks hold the parts, at the touch of a toe, in the exact position required for efficient work.

"GROOVED-WHEELS" HELP ROLL RESEARCH AHEAD

Here's a novel application for extra-heavy-duty Bassick grooved wheel casters:

The casters provide flexible, easily controlled movement for a 6,000-pound electromagnet, used in advanced research at Pennsylvania State University, University Park, Penna.

The angle-iron track structure, on which the grooved-wheels ride, provides a controlled path for the scientific apparatus, saves floors, and makes for easy rolling.



Note rigid casters on one track, swivel casters on the other, to prevent binding. Can you use this idea in your plant for especially heavy loads?

Some Cost-Cutting Can Be Painless

Materials-handling costs, usually 30% of production costs, are among the easiest costs to cut in a plant that's caught in the well-known profit squeeze. And Bassick casters, position locks, and wheel brakes help you save two ways: (1) you improve operations efficiency by better mobilization and utilization of equipment, better product handling; (2) you cut maintenance costs on casters, dollies and equipment, and floors.

1.41

SEE YOUR BASSICK DISTRIBUTOR

...he will be glad to recommend casters to solve your materials-handling problems—new or replacement—and he carries a broad selection of casters in stock for immediate delivery.

DID YOU KNOW

...that Bassick, the world's largest caster-maker is also the world's largest manufacturer of office chair tilt-control mechanisms?

THE BASSICK COMPANY
BRIDGEPORT 5, CONN.
IN CANADA:
BELLEVILLE, ONT.

Symbol of SW Excellence

Bassick
A DIVISION OF
STEWART-WARNER CORPORATION

For More Facts Write No. 184 on Information Card—Page 32

DoALL

ECONOMY SPECIAL

30-DAY INTRODUCTORY OFFER

THROW-AWAY CARBIDE INSERTS



Precision and utility ground . . . triangular, square, round and diamond shapes.

DURING APRIL
BUY AT BASE PRICE
NO QUANTITY EXTRA!

QUANTITY EXTRA TABLE (Stocked Items)

Add to Base Price per Insert the Appropriate Quantity Extra from Table.	Quantity	1-4	5-9	10-14	15-24	25-49	50-74	75-99	100-149	150-199	200-299	300-499	500-999	1000
	Add to Base Price	$2.00	$1.25	.65	.50	.30	.15	.10	.07	.05	.03	.02	.01	-0-

STEP UP YOUR PRODUCTION—CUT TOOL COSTS.

Here's a rare opportunity to save money and improve machining results. To introduce these new premium grade carbide inserts, your local DoALL store offers you the base price with no quantity extra as required under standard pricing above. ACT NOW. Call your local DoALL Sales-Service Store today. Special introductory offer ends May 1. Minimum order: one package (10 pieces).

Grades for steel—Highly resistant to cutting temperatures

GRADE DO-15 for HEAVY-DUTY ROUGHING
Very Good Shock Resistance
Medium Wear Resistance
For heavy roughing and interrupted cutting on all types of steels, including high-temperature alloys.

GRADE DO-16 for GENERAL PURPOSE
Good Shock Resistance
Good Wear Resistance
Universal grade for medium roughing and interrupted cuts on all types of steel including high temperature alloys.

GRADE DO-17 for FINISHING
Fair Shock Resistance
Very Good Wear Resistance
For light roughing and finish machining on all steels, high-temperature alloys, etc.; also for nodular and malleable iron.

GRADE DO-18 for PRECISION FINISHING
Moderate Shock Resistance
Excellent Wear Resistance
For high-speed fine finishing and boring on all types of carbon and alloy steel.



ACT NOW. Call your local DoALL Sales-Service Store today. Special offer ends May 1.

CT-65

THE DoALL COMPANY • DES PLAINES, ILLINOIS

For More Facts Write No. 185 on Information Card—Page 32



Truck at loading platform. In back are two of Maryland Chemical's outside tanks. (There is also inside tank storage.)



Rail siding, used for bulk shipments, permits handling up to 8 cars at a time.

Serving the middle Atlantic states . . .

Maryland Chemical Company

Efficiency . . . that's the success secret of Maryland Chemical Co. of Baltimore. With a fleet of trucks ranging from pick-up to tractor-trailers, this chemicals distributor offers same-day delivery within a 250-mile radius . . . includes Maryland, Pennsylvania, Virginia, West Virginia, Delaware and New York.

Tank storage and rail delivery facilitate a ready supply and bulk shipment, enable the company to maintain speed and flexibility of delivery.

Maryland Chemical backs its supply of organic and inorganic chemicals with technical service. If you require any information in this field, Maryland Chemical will see that you get immediate assistance.

The Maryland Chemical Company is typical of the outstanding chemical firms that distribute Mathieson and Blockson products throughout the country. For the name and address of the one in *your* area, please call or write: **Olin Mathieson, Baltimore 3, Md.**

CHEMICALS DIVISION **Olin**

BLOCKSON Chemicals—Trisodium Phosphate • Trisodium Phosphate Chlorinated • Sodium Tripolyphosphate • Tetrasodium Pyrophospate • Sodium Hexametaphospate • Monosodium Phosphate •Disodium Phosphate • Sodium Acid Pyrophosphate • Tetrapotassium Pyrophosphate • Sulfuric Acid • Hydrofluoric Acid • Sodium Silicofluoride • Sodium Fluoride • Teox® 120 Surfactant

MATHIESON Chemicals—Ammonia • Sodium Bicarbonate • Carbon Dioxide • Caustic Soda • Chlorine • Formaldehyde • Hydrazine and Derivatives • Hypochlorite Products • Methanol • Muriatic Acid • Sodium Nitrate • Nitric Acid • Soda Ash • Sodium Chlorate • Sodium Chlorite Products • Sodium Methylate • Sulfur (Processed) • Sulfuric Acid • Urea • Ethylene Oxide • Ethylene Glycols • Polyethylene Glycols • Propylene Oxide • Propylene Glycols • Polypropylene Glycols • Ethanolamines • Glycol Ethers • Surfactants • Ethylene Dichloride • Propylene Dichloride

9179

For More Facts Write No. 186 on Information Card—Page 32

Purchasing People In The News

Horace G. Pitches has been appointed director of purchases for **Mohasco Industries, Inc., Amsterdam, N. Y.** In this newly created



Horace G. Pitches

position Mr. Pitches will direct and coordinate the entire company purchasing with the exception of wool buying. This continues to be the responsibility of **John Petterson.**

Malcolm MacLachlan has been appointed purchasing agent of **Dun & Bradstreet, Inc., New York, N. Y.** He succeeds **Gordon Aubrecht,** who becomes district manager in the Chicago office. Mr. MacLachlan came to the company in 1932 as a credit reporter in the New York office. Most recently he was manager of the methods and research department.

The American Optical Company, Southbridge, Mass., has named **V. J. Rubenstein** to the new post of director of materials control, and **J. L. Hebert** as purchasing manager.

Mr. Rubenstein joined the company in 1923 in the purchasing department. He was made purchasing manager in 1952 and assistant treasurer in 1956. In his new assignment, he will be responsible for all inventory and purchasing functions. Mr. Hebert joined AO in 1933. He has had responsibilities in sunglass sales, the Government service bureau, lens sales, the export department and the warehouse. Most recently he has served as Southbridge warehouse and inventory manager.

Cloice E. Temple has been named works purchasing agent for **Allis-Chalmers, Norwood, Ohio.** He had been works purchasing agent at Gadsden, Ala. Mr. Temple succeeds **Roy N. Miller,** who remains at the Norwood works in an advisory capacity until his retirement. Mr. Temple joined the company in 1936 and was assistant works purchasing agent at



Cloice E. Temple

Laporte, Ind. works before becoming works purchasing agent at Gadsden. He is a graduate electrical engineer of Georgia Tech. and is district vice president of the N.A.P.A. and a past president of the Alabama Purchasing Agents Association.

Tuthill Pump Company, Chicago, Ill. has named **Bernard J. Bartnicki** as purchasing agent. Before joining the company, Mr. Bartnicki served for over ten years as production manager and



Bernard J. Bartnicki

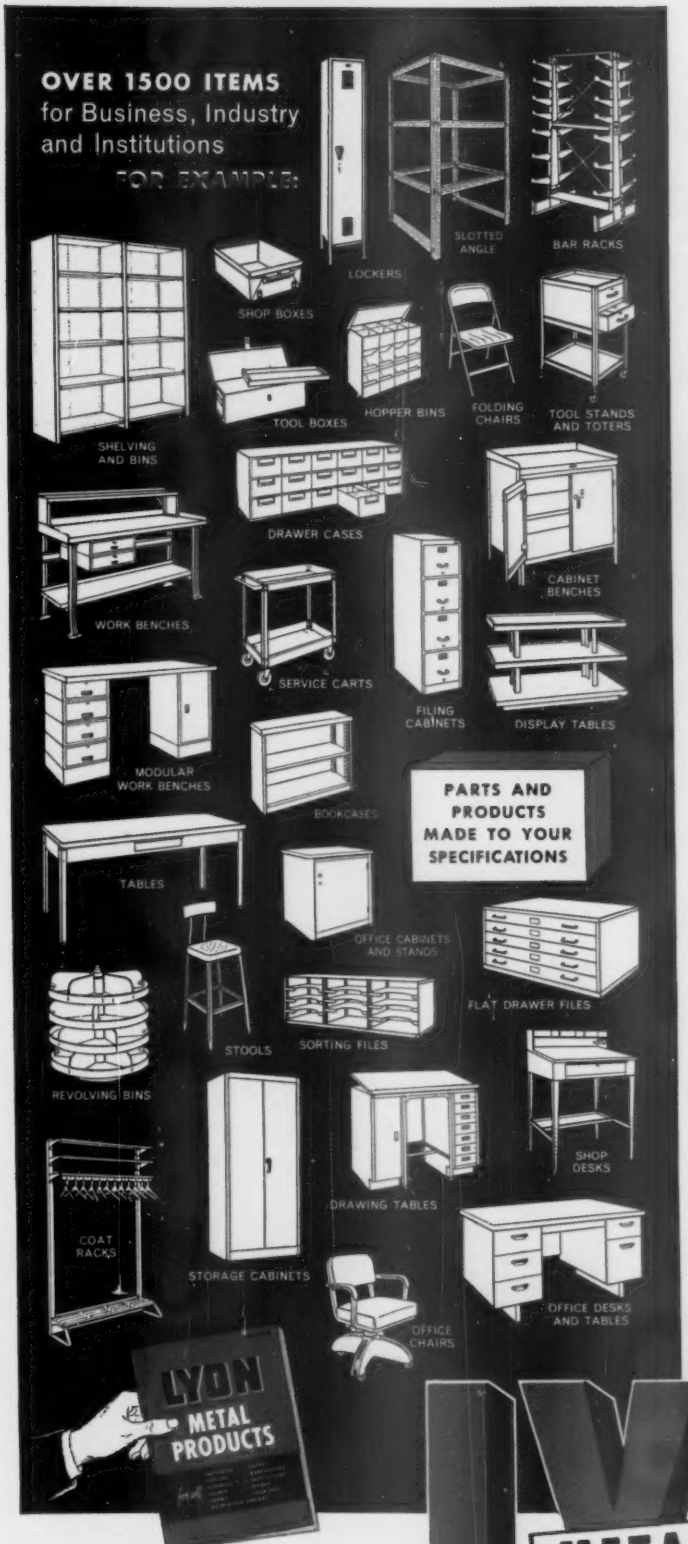
material controls supervisor of the Howard Foundry Company, Chicago. He attended the University of Illinois and Northwestern University.

The appointment of **Sidney W. Gabriel** as director of purchases for **General Cable Corporation,**



Sidney W. Gabriel

New York, N. Y. has been announced. Mr. Gabriel was formerly assistant director of purchases.



THIS CATALOG ILLUSTRATES
THE WORLD'S MOST
DIVERSIFIED LINE
OF STEEL EQUIPMENT
IT'S FREE!



5 TO 1

"If your company were in the market for steel equipment such as steel shelving, lockers, work benches, shop boxes, etc., what manufacturers would you consider?"

That was the question an independent survey organization put to key men in companies throughout the country back in 1955. They gave Lyon 5 times more first choice votes than any other manufacturer.

In a comparable survey made in 1960, Lyon's first choice margin increased to 7 to 1—and Lyon received more exclusive mentions than the next twenty-two companies combined!

Your nearest Lyon Dealer offers the world's most diversified and *most preferred* line of steel equipment—quality protected to give you the most for your investment.

LYON METAL PRODUCTS, INC.

General Offices: 433 Monroe Ave., Aurora, Illinois
Factories in Aurora, Ill.—York, Pa.—Los Angeles
Dealers and Branches in All Principal Cities

LYON®
METAL PRODUCTS

For More Facts Write No. 187 on Information Card—Page 32

DODGE HAS MORE PROVED BEARINGS THAN YOU HAVE BEARING PROBLEMS!

It pays to buy from a line of stock bearings—bearings that have been proved in thousands of installations similar to yours. You benefit by getting known dependability; and you get the important savings of high quality at production price.

PIN-POINT SELECTIVITY

Dodge has supplied mounted bearings to industry for over three-quarters of a century. Dodge bearings have always kept pace with improved production practices. Each new condition of service has been met by Dodge as it has arisen, with the result that the Dodge line contains mounted bearings to meet almost every service requirement with pinpoint accuracy.

High load, high speed, excessive dust, moisture, corrosion, high or low temperatures, continuous operation—you name it!—such conditions and their combinations are met every day with Dodge bearings.

BROAD LINE—WIDELY DISTRIBUTED

In the great variety of mounted bearings developed by Dodge, you will most likely find the precise unit to fit your requirements ideally—without paying for features you do not need. And if your requirements call for several types of bearings, there is an advantage in having them of common design, such as Dodge offers.

The Dodge line is probably broader than any other line of mounted bearings in America. And of special importance to machinery manufacturers, it is the most widely distributed line. There is always a Dodge bearing of the right type and size near at hand.

You can check this with your local Dodge Distributor. Ask him—or write us for the Dodge Bearing Bulletin.

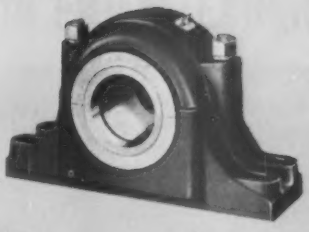


In addition to tapered roller, spherical roller and ball bearings, Dodge builds many types of sleeve bearings. Here is the "large and small" of the sleeve type bearings carried in stock—ranging from an 8-in. Sleevoil weighing over 1200 lbs. to a ½-in. solid journal bearing weighing 9 ounces.

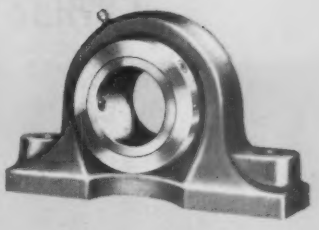
DODGE MANUFACTURING CORPORATION, 1300 Union Street, Mishawaka, Indiana



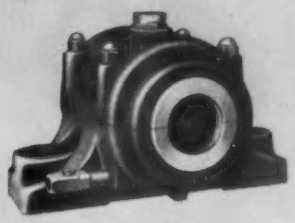
DODGE PILLOW BLOCKS WITH TIMKEN TAPERED ROLLER BEARINGS



DODGE SPHER-ALIGN PILLOW BLOCKS WITH SPHERICAL ROLLER BEARINGS



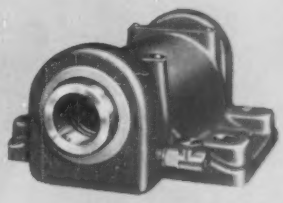
DODGE BALL BEARING PILLOW BLOCKS



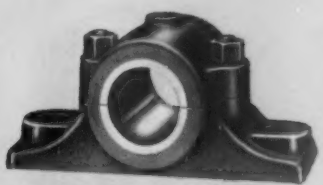
DODGE SLEEVOIL PILLOW BLOCKS



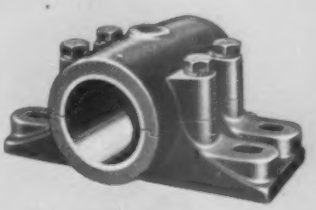
DODGE BRONZOIL PILLOW BLOCKS



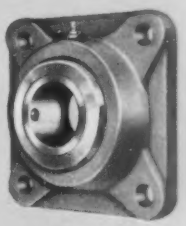
DODGE BRONZE BUSHED PILLOW BLOCKS



DODGE JOURNAL BEARINGS SOLID AND SPLIT



DODGE HEAVY RIGID PILLOW BLOCKS



FLANGE BEARINGS: HANGER BEARINGS: BEARING UNITS: TAKE-UPS

● **Dodge Pillow Blocks with Timken Tapered Roller Bearings.** America's quality pillow blocks. Assembled, lubricated, adjusted and sealed at the factory. 5 types for varying needs.

● **Dodge Spher-Align with Spherical Roller Bearings.** Rugged heavy duty, compact, inherently self-aligning. Exclusive Micro-Mount simplifies installation.

● **Dodge Ball Bearing Pillow Blocks.** Deep groove ball bearings with long inner races—high capacity. SL, SC and SCM models for light, normal and medium service respectively.

● **Dodge Sleevoil Pillow Blocks.** Ultra quality . . . extra long life . . . accessibility . . . *quiet*. Plain or water-cooled.

● **Dodge Bronzoil Pillow Blocks.** Efficient, low cost pillow blocks with self-oiling, capillary bronze bushings. Self-aligning. Large oil reservoirs.

● **Dodge Bronze Bushed Pillow Blocks.** Quiet fan and blower pillow blocks with two bronze bushings of high lead content mounted in one cast iron housing.

● **Dodge Journal Bearings — Solid and Split.** True running, dependable. Babbitted bearings with precision machined bores and faces. Finished bases.

● **Dodge Heavy Rigid Pillow Blocks.** Rugged, carefully bored, babbitted pillow blocks for many applications requiring grease lubrication. Finished bases and ends.

● **Bearing Units.** A wide variety—spherical seat, cartridge, flange, hanger, screw conveyor hanger, take-up. Ball, Roller and Sleeve types.



CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look under "Dodge Transmissioneer" in the *white* pages of your telephone directory, or in the yellow pages under "Power Transmission Machinery."

DODGE

of Mishawaka, Ind.

For More Facts Write No. 188 on Information Card—Page 32

BETTER PROFITS THROUGH BETTER TOOLING WITH CARBOLOY® CARBIDE PLUSES



ANNOUNCING THE NEW CARBOLOY® TRACER IN THE ADJUST-O-BREAKER TOOLHOLDER FAMILY

Now you can choose your tracer toolholders with all the cost-cutting advantages of the Carboloy® Adjust-O-Breaker line. The newest addition to the Adjust-O-Breaker line, this tracer toolholder is available in 2 styles and 7 sizes to help you handle more jobs with less tooling.

The exclusive Adjust-O-Breaker design lets you adjust the chipbreaker from any angle . . . offers any desired adjustment within its range . . . features "floating" indexable chipbreaker with absolute repeatability. In addition to the tracers, you can choose from negative rake Adjust-O-Breakers (10 styles, 54 sizes), and positive rake (5 styles, 50 sizes), to meet most of your tooling needs more efficiently and economically.

Check today with your Authorized Carboloy Distributor — or write: *Metallurgical Products Department of General Electric Company, 11143 E. 8 Mile Street, Detroit 32, Michigan.*

CARBOLOY®
CEMENTED CARBIDES

METALLURGICAL PRODUCTS DEPARTMENT

GENERAL ELECTRIC

CARBOLOY® CEMENTED CARBIDES • MAN-MADE DIAMONDS • MAGNETIC MATERIALS • THERMISTORS • THYRITE® • VACUUM-MELTED ALLOYS

For More Facts Write No. 189 on Information Card—Page 32

WHAT'S NEWS IN ENJAY TECHNICAL SERVICE



Enjay helps reduce cost of 90°C vinyl wire insulation...

An important part of Enjay Technical Service is developing useful new products that reduce costs, yet maintain performance. Ditridecyl phthalate for use in plasticizing vinyl wire insulation is a good example of this research activity. By tests, such as the oven aging shown above, Enjay was able to prove that DTDP, made from Enjay tridecyl alcohol, performs as an efficient, non-volatile plasticizer for 90°C wire – yet reduces plasticizer cost. Test results, at right, show that the insulation exceeds the U.L. Specifications.

Enjay research facilities and technical skills are available to customers in the vinyl wire, film and sheeting industries.

If you would like to receive a free copy of our new Technical Bulletin No. 20 on Enjay oxo alcohol for plasticizers, write to 15 West 51st Street, New York 19, N. Y.

TEST RESULTS: 7 DAYS @ 121°C

	U.L. Specification Minimum	DTDP Plasticizer
Elongation	65% retention	100% retention
Tensile Strength	65% retention	101% retention
Dielectric Strength	50% retention	127% retention
Insulation Resistance*	.01 megohm based on 1000 ft.	0.36 megohm based on 1000 ft.

* 1 day and 7 days @ 113°C.

EXCITING NEW PRODUCTS THROUGH PETRO-CHEMISTRY

ENJAY CHEMICAL COMPANY

A DIVISION OF HUMBLE OIL & REFINING COMPANY

ENJAY

PETROCHEMICALS

For More Facts Write No. 190 on Information Card—Page 32

Pin it
...with
Hindley
Cotter Pins



Precision cotter pins hold down assembly costs. For a full range of shapes and sizes in Monel, Everdur, Stainless Steel, Brass, Copper and other metals, call on Hindley. Write for folder.

Hindley
Since 1897

Hindley Manufacturing Co., Cumberland, R. I.
Wire Hardware • Cotter Pins • Plumbing Specialties

For More Facts Write No. 191
on Information Card—Page 32

FOB-"filosofy of buying"

AT FIRST we thought it was a case of bucolic value analysis when we saw the newspaper headline, "Moonshine by the Squirt: Bootleggers Now Use Plastic Squeeze Bottles." It turned out to be another case of government interference in business. Seems the Internal Revenue Service can require detailed sales reports from distributors suspected of selling conventional containers to moonshiners—fruit jars, glass jugs, and five-gallon tin cans. So the boys in the hills have gone in for material substitution—plastic squeeze bottles.

"The bow to modernity was not made by choice," says IRS, with a straight face. "It is a measure of desperation resulting from the intensive drive to dry up sources of containers that can be used in packaging illicit liquor."

Brings back memories of a packaging and transportation problem your Old Filosofer and many thousands of other G.I.'s had in Normandy. The problem was to maintain a balanced inventory of home-made Calvados. We solved it with the decentralized approach. The initial shipment arrived in five-gallon cans and was redistributed into our canteens by a nondrinking member of the unit.

In case you're wondering, Calvados is a kind of French applejack later used as a component of the atom bomb.

• •

THE NEW YORK TIMES called the following excerpts from a revised glossary of Pentagonese, but they shouldn't be unfamiliar to the rest of us:

A program—Any assignment that cannot be completed by one telephone call.

Consultant—Any ordinary man more than fifty miles from home.

To activate—To make carbons and add more names to the memo.

To implement—Hire more people and expand the office.

Reorientation—Getting used to working again.

Committee—The unwilling, picked from the unfit, to do the unnecessary.



"You expect me to accept a reliability report by a chimpanzee?"

WOLVERINE TUBE Division of Calumet & Hecla, Inc., has been putting on an intensive educational campaign on imports and their meaning to U. S. industry. One of the latest pamphlets in the Wolverine series, "Suppose It Happened to US?," features a mythical purchasing agent who gives management the picture on the true cost of foreign-made parts. The pamphlet, and others in the series, are available from Wolverine's advertising department, 17200 Southfield Rd., Allen Park, Mich.

• •

THIS SOLICITATION actually came in a direct-mail piece:

"For those who wouldn't like to be caught dead in a plush-lined coffin, we offer the traditional plain box of pine, redwood, cedar or mahogany, with strong rope handles. Cover it with cushions, and it can double as a storage chest and low seat, until needed for its ultimate purpose. About $140 (crated F.O.B. Newport, R.I.) . . . and very good-looking. To order."

Guess it would eliminate the high cost of a rush-order, at that.

• •

DESPITE formidable competition from Harvard, Yale, and Adlai Stevenson's law firm, purchasing finally got a graduate on President Kennedy's New Frontier team. He's Jack Bush, purchasing agent for the state of Ohio from 1949 to 1957, who was appointed a member of the Interstate Commerce Commission. We well remember Jack's fine hospitality in Columbus during a meeting of the state purchasing agents' group several years ago.

• •

LATEST of the many simple but attractive welcome folders we've been seeing in increasing numbers is that of the Purchasing-Stores Department of Shell Oil Company and Shell Chemical Company, Los Angeles. Manager Rex Hensel has put together a fact-and-picture guide for salesmen on "What We Buy—Whom to See."



JOMAC GLOVES GIVE CUT PROTECTION THAT EVEN LEATHER CAN'T

The remarkable cut resistance of Jomac's loop-pile fabric glove is a *plus* that even expensive leather gloves do not provide. Moreover, Jomac gloves offer a better grip on oily surfaces and can be reconditioned time after time.



For maximum hand protection, it's North PVC Gloves. They offer better fit, greater dexterity, more comfort and superior safety in handling chemicals, oils and greases.

To keep outdoor workers dry, comfortable and safe in foul weather, insist on North PVC Wet-Weather Clothing . . . resistant to most oils, greases and chemicals, tough, flexible, non-aging and waterproof.



WRITE TODAY FOR A FOLDER DESCRIBING THESE PROTECTIVE JOMAC PRODUCTS

JOMAC

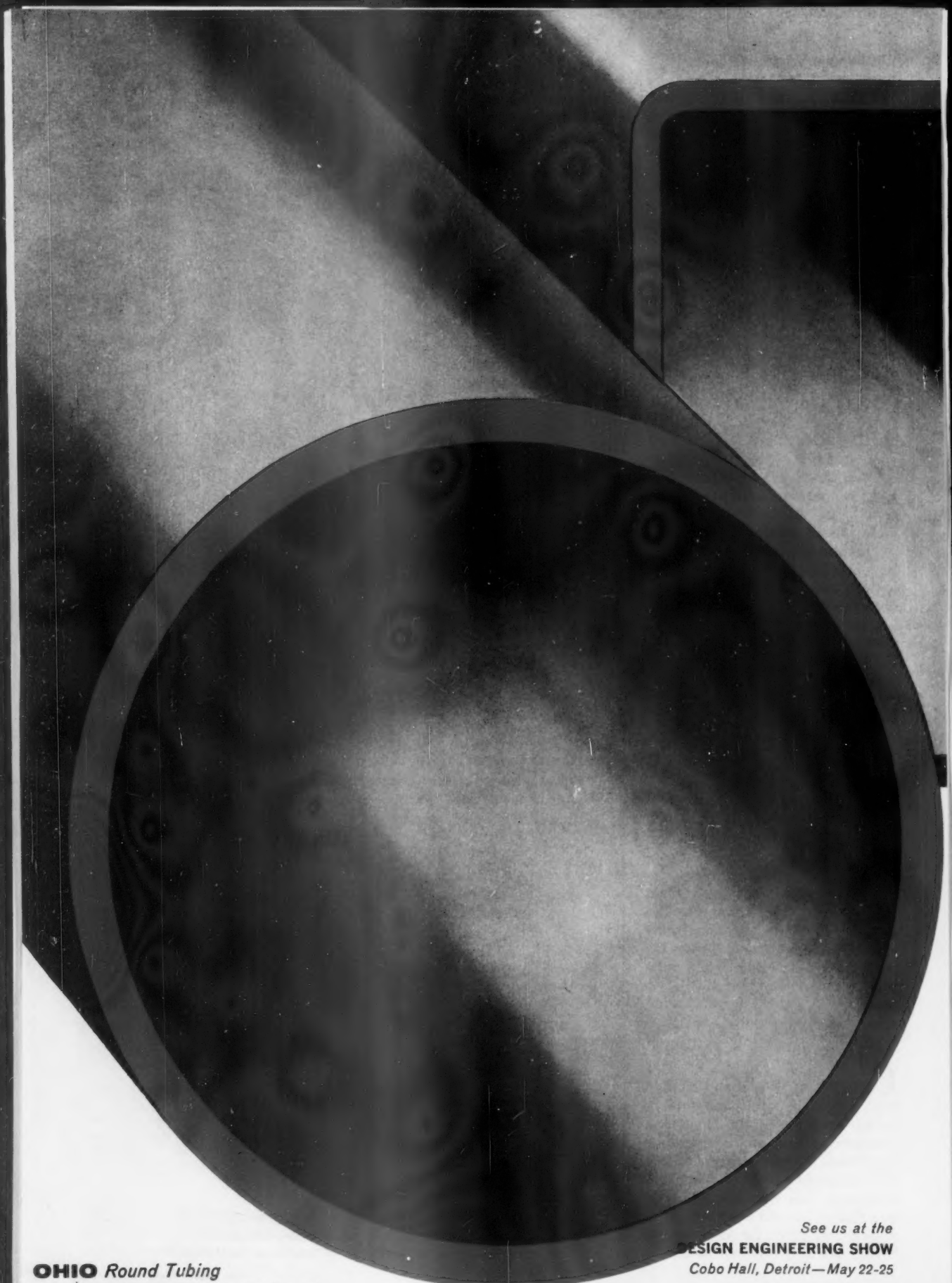
Jomac Inc., Dept. F
Philadelphia 38, Pa.

In Canada: James North Canada Company Ltd., Simcoe, Ont.

"Jomac Sells Quality . . . and Quality Sells Jomac!"

For More Facts Write No. 192 on Information Card—Page 32

For More Facts About Ad on Following Page Write in No. 193→



OHIO *Round Tubing*
To 7-1/2" OD x .375" wall

See us at the
DESIGN ENGINEERING SHOW
Cobo Hall, Detroit—May 22-25

A-5573A



OHIO *Square Tubing*
To 6" x 6" x .259" wall

OHIO *Rectangular Tubing*
To 7-1/2" major diameter x .259" wall
Typical 4" x 6" x .259" wall section illustrated

Announcing Mechanical — Pressure — Cold Drawn

OHIO QUALITY WELDED STEEL TUBING

in larger sizes...heavier wall thicknesses

OHIO SEAMLESS TUBE

Division of Copperweld Steel Company • **SHELBY, OHIO**

Seamless and Electric Resistance Welded Steel Tubing • Fabricating and Forging

New sizes and heavier wall thicknesses of Ohio Quality Welded Steel Tubing (up to 7½" OD) now parallel the sizes of famous Ohio Seamless Steel Tubing. That means — now more than ever — there's a type and size of Ohio tube to fit your special requirements exactly. And since we make both types, we're in a position to recommend the best type for your own particular needs. Ohio Tubing — either welded or seamless — is just "made to order" for your product.

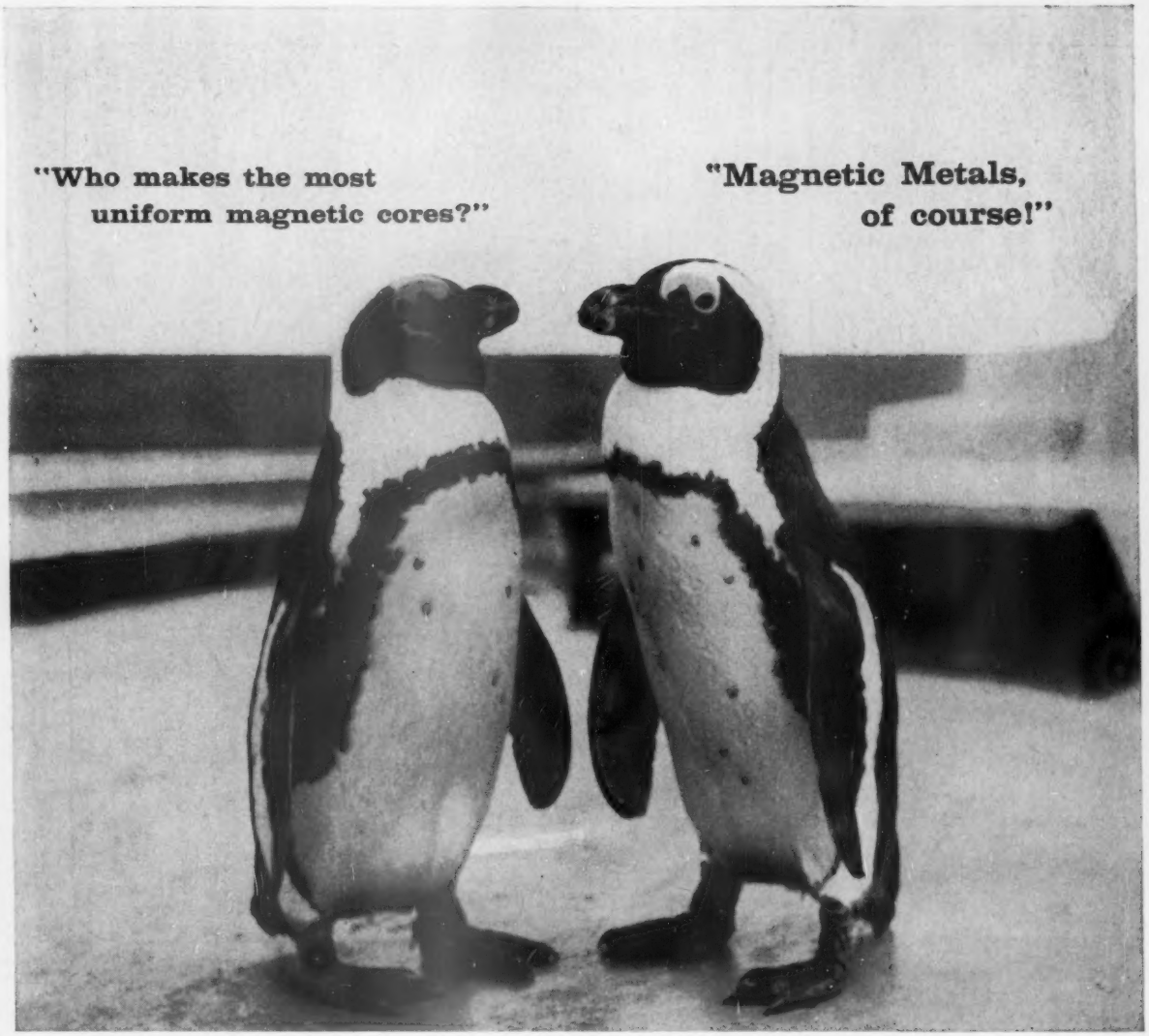
Cut along line and send air mail to save time.

RUSH me, without obligation, latest information on new larger sizes and heavier wall thicknesses of Ohio Welded Steel Tubing.

Name_____ Title_____

Company _____

Address_____ City_____ State_____



When you're faced with an order for magnetic cores with closely matched characteristics, tape-wound Centricores® will fill the bill exactly. They're the most consistently uniform cores available anywhere.

Centricore uniformity begins with the careful screening of raw materials for the exact magnetic properties you need, is maintained in winding through use of special machines of our own design, and completed with annealing under rigidly controlled conditions. The rugged design of the leak-proof Centricore cases permits use of a thinner gage aluminum that shaves fractions of an inch off their size—fractions that can add up to precious inches when you want to scale down component dimensions. *Centricores are the slimmest magnetic cores on the market.*

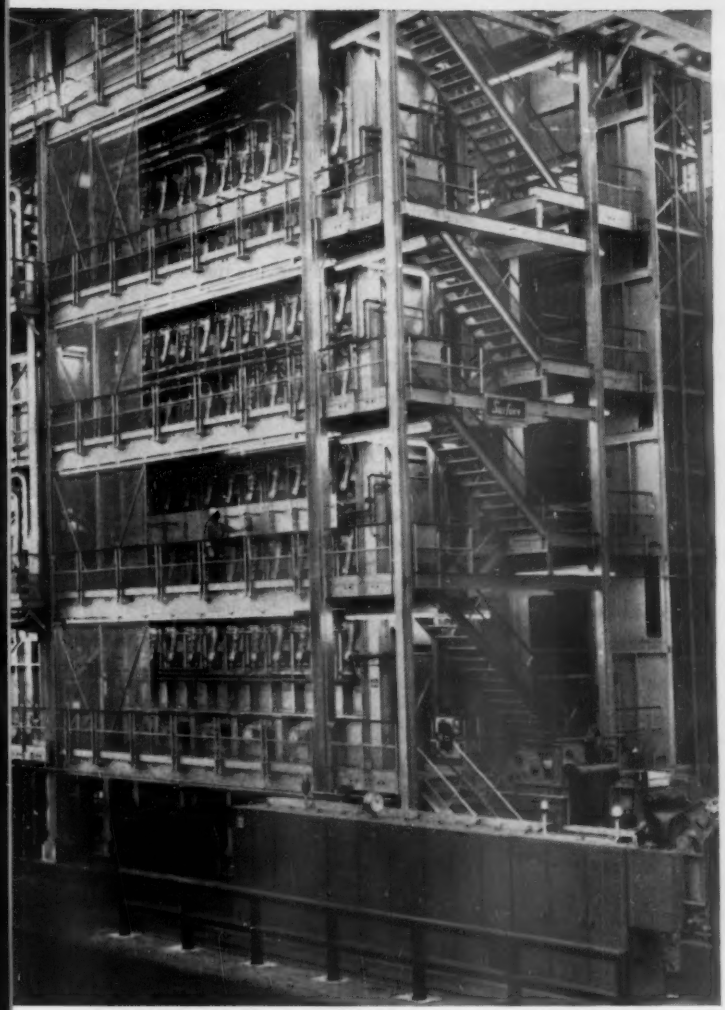
With Centricores—and all Magnetic Metals products—comes expert, interested help with any specification problems you may have. And you can depend on prompt delivery from either our East or West Coast plants. Write or call today.

MAGNETIC METALS

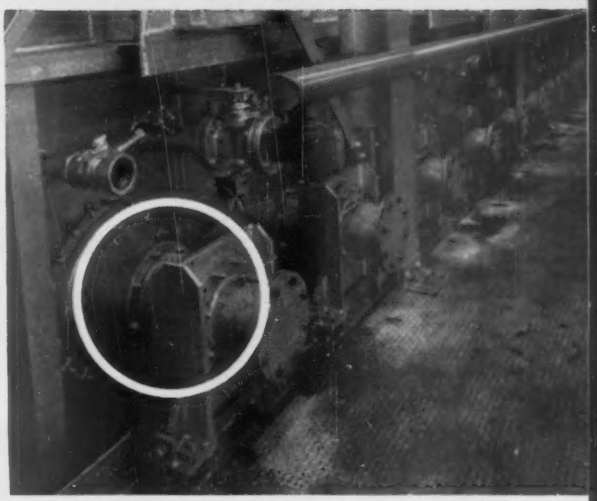
MAGNETIC METALS COMPANY
Hayes Avenue at 21st Street, Camden 1, N.J.
853 Production Place, Newport Beach, California
transformer laminations • motor laminations • tape-wound cores
powdered molybdenum permalloy cores • electromagnetic shields

For More Facts Write No. 194 on Information Card—Page 32

For More Facts About Ad on Facing Page Write in No. 195→

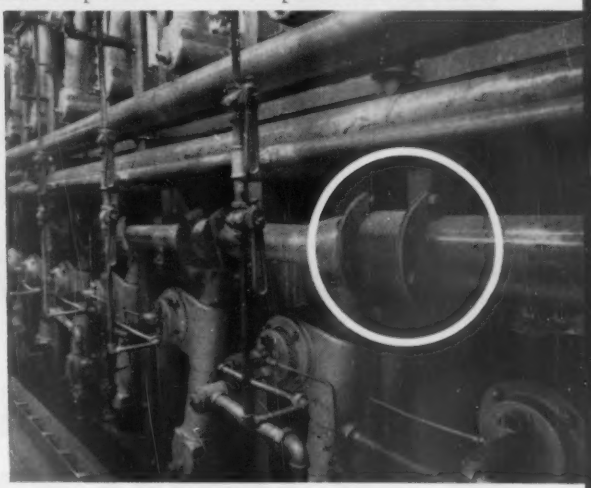


A view of the U.S. Steel's giant annealing furnace in Pittsburg, Calif. Coils are welded together so that a mile-long strip is constantly moving through the series of heating, soaking and cooling zones in roller-coaster fashion at speeds up to 1500 feet per minute.

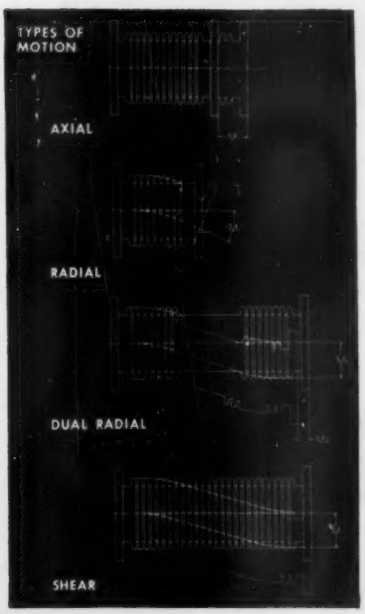


Anaconda A-X flexible connectors installed at roll-shafts absorb thermal expansion and contraction and seal in inert gas furnace atmosphere.

Anaconda A-X stainless steel flexible connectors on flue-gas lines compensate for thermal expansion and contraction.



ANACONDA A-X FLEXIBLE CONNECTORS PROTECT PIPING, SEAL ROLL-SHAFTS IN LARGE ANNEALING FURNACE



Continuous strip annealing furnace temperatures cause a variety of movements due to thermal expansion and contraction. To absorb this movement in flue-gas lines and to provide shaft seals on rolls, Surface Combustion Division of Midland-Ross Corp., designers and builders of U.S. Steel's giant furnace, installed hundreds of Anaconda A-X stainless steel flexible connectors.

Anaconda A-X Tubing is a flexible metal connector designed to handle the types of movement shown at left while conveying liquid and gas over a wide range of temperatures. It is available in stainless steel and other alloys and is generally sold complete with fittings. Nominal tubing I.D.'s: 5″, 6″, 8″, 10″, 14″. For complete details, write for Bulletin A-X 97 or call your Anaconda Metal Hose representative. Anaconda Metal Hose, Box 791, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont. 61129

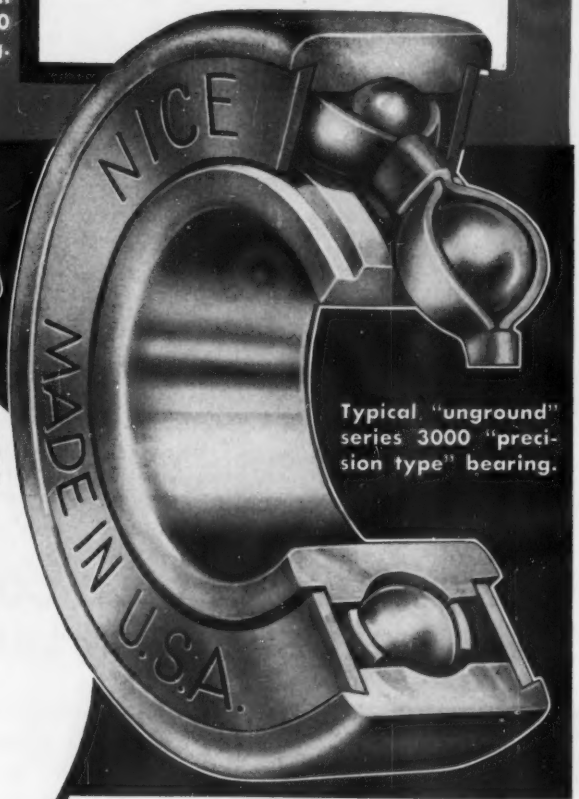
ANACONDA® METAL HOSE



Typical "ground all over" series 1600 "precision" bearing.

YES, the bearings illustrated are identical, except for degree of precision. Because of the precision differences, there is a substantial difference in cost . . . NICE can provide bearings incorporating any degree or combination of precision features between the higher priced "ground all over" series 1600 and the low cost "unground" series 3000.

ARE YOU PAYING FOR MORE PRECISION THAN YOUR BEARING APPLICATION REQUIRES? The specific requirements of your particular application should determine the precision features of the bearing you use.



Typical "unground" series 3000 "precision type" bearing.

COST REDUCTION is Today's No. 1 Design Problem ...and NICE Can Help Lower Costs!

PRODUCT DESIGNERS will find many cost-saving advantages in the use of NICE PRECISION, SEMI-PRECISION and UNGROUND BALL BEARINGS. Experienced NICE Engineers can not only help in the selection of the proper standard bearing, but can design "exactly right" special bearings to meet particular application requirements.

WRITE FOR CATALOG NO. 190

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NICE BALL BEARING COMPANY

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For More Facts Write No. 196 on Information Card—Page 32

Calendar of Coming Events



April 10-13. American Management Association: 30th National Packaging Exposition, Lakefront Exposition Hall, Chicago, Ill.

April 11-14. Copper & Brass Warehouse Association: Annual Meeting, Broadmoor Hotel, Colorado Springs, Colo.

April 12-13. Purchasing Agents Association of Louisville: 3rd Annual Purchasing Workshop, University Center, Louisville, Ky.

April 17-21. American Welding Society: Spring Meeting, Coliseum, New York, N. Y.

April 17-21. Business Equipment Exposition: Office Equipment Manufacturers Exhibits, Coliseum, New York, N. Y.

April 29-May 3. National Screw Machine Products Assn: National Meeting, Somerset Hotel, Boston, Mass.

May 2-3. Lead Industries Association: 33rd Annual Meeting, Drake Hotel, Chicago, Ill.

May 3-5. National Association of Educational Buyers: 40th Annual Convention, Chase Park Plaza Hotel, St. Louis, Mo.

May 7-11. National Office Management Association: Sheraton Jefferson Hotel, St. Louis, Mo.

May 8-11. National Welding Supply Association: 17th Annual Convention, Hotel Commodore, New York, N.Y.

May 24-25. American Iron and Steel Institute: Annual Meeting, Waldorf-Astoria Hotel, New York, N. Y.

May 24-26. Electronic Industries Association: 37th Annual Convention, Pick-Congress, Chicago, Ill.

May 25-26. National Society of Business Budgeting: Statler Hilton Hotel, Dallas, Tex.

May 29-30. Canadian Purchasing Agents Association: 36th Purchasing Conference and Products Display, Royal York Hotel, Toronto, Canada.

June 4-7. National Association of Purchasing Agents: Annual Convention, Conrad Hilton Hotel, Chicago, Ill.

June 5-9. Society of the Plastics Industry: 9th National Plastics Exposition, Coliseum and Commodore Hotel, New York, N.Y.

June 14-17. Drop Forging Association: Annual Meeting, Greenbrier, White Sulphur Springs, W. Va.

July 18-20. Western Plant Maintenance and Engineering Show: Pan Pacific Auditorium, Los Angeles, Calif.

SUBSCRIPTION CORRESPONDENCE AND CHANGE OF ADDRESS: Write to Circulation Department, PURCHASING Magazine, 205 East 42nd Street, New York 17, N. Y. Please give title and company affiliation in all correspondence. Notify us promptly of any change of address. Be sure to give old as well as new address; include postal zone number, and new company name and title. Enclose address label from a recent issue, if possible. Since mailing labels are addressed in advance, please allow 5 weeks for change to become effective.

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Performance



alloy slings



Consistent, full-duty performance is routine for TM Alloy Slings. That's why they are preferred for heavy material handling in all types of industry. Controlled heat-treating . . . brute strength . . . and scientific quality control, all have an important bearing on this enviable record. Call your distributor, steel warehouse, hardware wholesaler or write for Bulletin 14A.

S. G. TAYLOR CHAIN CO., Inc.
Plants: Hammond, Indiana
3505 Smallman St., Pittsburgh, Pa.

Prompt repairs on alloy slings in both plants.

Taylor Made CHAIN SINCE 1873

For More Facts Write No. 197 on Information Card—Page 32



WHICH WAY?



There are many ways to weld, but you want the one that *best* fits your needs. Your choice is determined by metals, thicknesses, designs, joints...and your fabricating objectives—economy, quality, speed, strength, appearance, precision. Which welding process should you use? Tig? Mig? CO_2? Spot welding? Manual, semi-, or fully-automatic? Would a cutting process simplify production? Correct answers to these questions require experience with the major arc welding and cutting processes—from submerged arc to plasma arc—introduced during the past 25 years.

LINDE has *all* of these processes. No other company does. In fact, LINDE *introduced* almost all of them...and *improved* the rest. Consequently, LINDE has far more experience with tungsten-arc cutting, inert-gas welding, and continuously-fed electrode welding than any other company in the world. In many cases, these processes are ideal. In some, they are even a necessity. Because we have all of them, we recommend only the one that *best* fits your needs. When making your choice, bear in mind that a recommendation from an equipment manufacturer is apt to be *only as accurate as the completeness of his line.*

LINDE COMPANY
Division of Union Carbide Corporation
270 Park Avenue, New York 17, N. Y.

UNION CARBIDE

"Linde" and "Union Carbide" are registered trade marks of Union Carbide Corporation.

For More Facts Write No. 198 on Information Card—Page 32

DON'T DISCARD THAT DATA!—You've probably worked on many projects for design engineering where you dug up technical and cost data on new materials or products. When they don't result in purchase orders do you just dump all that information? It might come in handy later. One purchasing research group keeps a chronological journal of all the projects it works on. Many ideas can't be used at the moment, but later they turn out to be practical and in some cases essential. The data already collected then proves valuable.

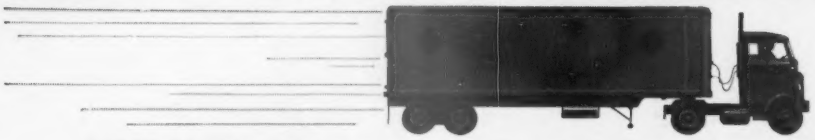
WHEN NEW MATERIAL GOES INTO STOCK—Does purchasing review every request from engineering for authorization to place a new material in stock? A plant that started this procedure found it saved a lot of time purchasing used to spend on developing sources and negotiating. Now purchasing checks every request, asking (1) Is the part necessary? (2) Is the item readily procurable? (3) Is its cost reasonable in relation to intended use? (4) Can we use a similar material now in stock?

TRAFFIC INSTRUCTIONS FOR VENDORS—Litton Industries sends every vendor's traffic department a mimeographed sheet of "Transportation Routing Instructions." It covers local area shipments, LCL shipments, carload shipments, air shipments, and value declarations. To insure compliance with the instructions, Litton asks that the vendor acknowledge receipt of the sheet by signing and returning a copy of the covering letter.

STANDARDS CAN BE RETURNED—Don't forget this big advantage to standardizing supply items: "shelf" items can be returned to vendors for full or partial credit. But the initiative will have to come from you—vendors generally won't volunteer to relieve you of your excess. When you switch to a standard, be sure to make arrangements with suppliers for a regular review and return of surplus stocks.

HOW TO CONTROL YOUR EGO—Modesty, or at least realism, should be the mark of a good buyer. Remember these words of the late Al Browning, head of Ford purchasing: "The flattery of power, of controlling business, and the social invitations for lunch, golf, dinner that go with the job really test your resistance and your ability to do your job. There's one simple way of deflating your ego—and all of us find that necessary now and then. Simply ask yourself this question, 'Would I get the same attention and invitations if I weren't a buyer?' "

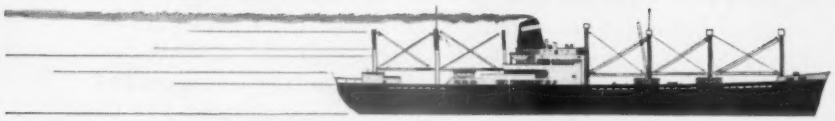
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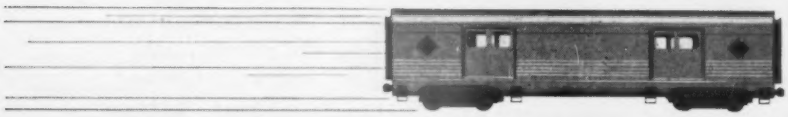
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New name...new methods and equipment ...new low rates...new spirit! That's R E A Express—the national and world-wide *truck-plane-ship-train* service of Railway Express. It's the simplest way to ship: with just *one* carrier—R E A—all the way!

Ship anything, anywhere, any time via the R E A domestic and overseas network. You ship many commodities at rates comparable to—often *lower* than—parcel post and so-called "low-cost" carriers.

No other organization can match R E A —world's most complete shipping service!

SPECIAL NEW LOW RATES ON THESE AND MANY OTHER COMMODITIES:

- Farm implements and parts
- Rugs and carpets
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- Shoes and other footwear
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- Automobile, truck and trailer parts
- Piece goods
- Curtains and draperies
- Sheets, towels, tablecloths
- Photographic equipment and supplies
- Hand tools
- Machinery and machine parts

This is only a partial list applying between all points. Call your local R E A office if *your* commodity is not included here. If it *is*, call for the complete rate story—it will show you big savings.

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New Concepts For Purchasing

PURCHASING MAGAZINE
APRIL 10, 1961

IN ONE SENSE, the terms "buyers' market" and "sellers' market" are becoming obsolete. Once they had, more or less, the standing of immutable law among businessmen. Sharp swings in the business cycle were inevitable. It seemed only natural that one group prospered at the expense of another. Purchasing agents cracked the whip and salesmen cowered in a buyers' market; the positions were reversed in a sellers' market.

The issue is not quite that simple in today's more complex, more competitive economy. While the basic cyclical nature of business may not have changed, the inevitability of boom-or-bust is no longer accepted. And the notion that purchasing agents and salesmen must expect alternate periods of exaltation and humiliation with each change in the Index of Industrial Production is really old hat.

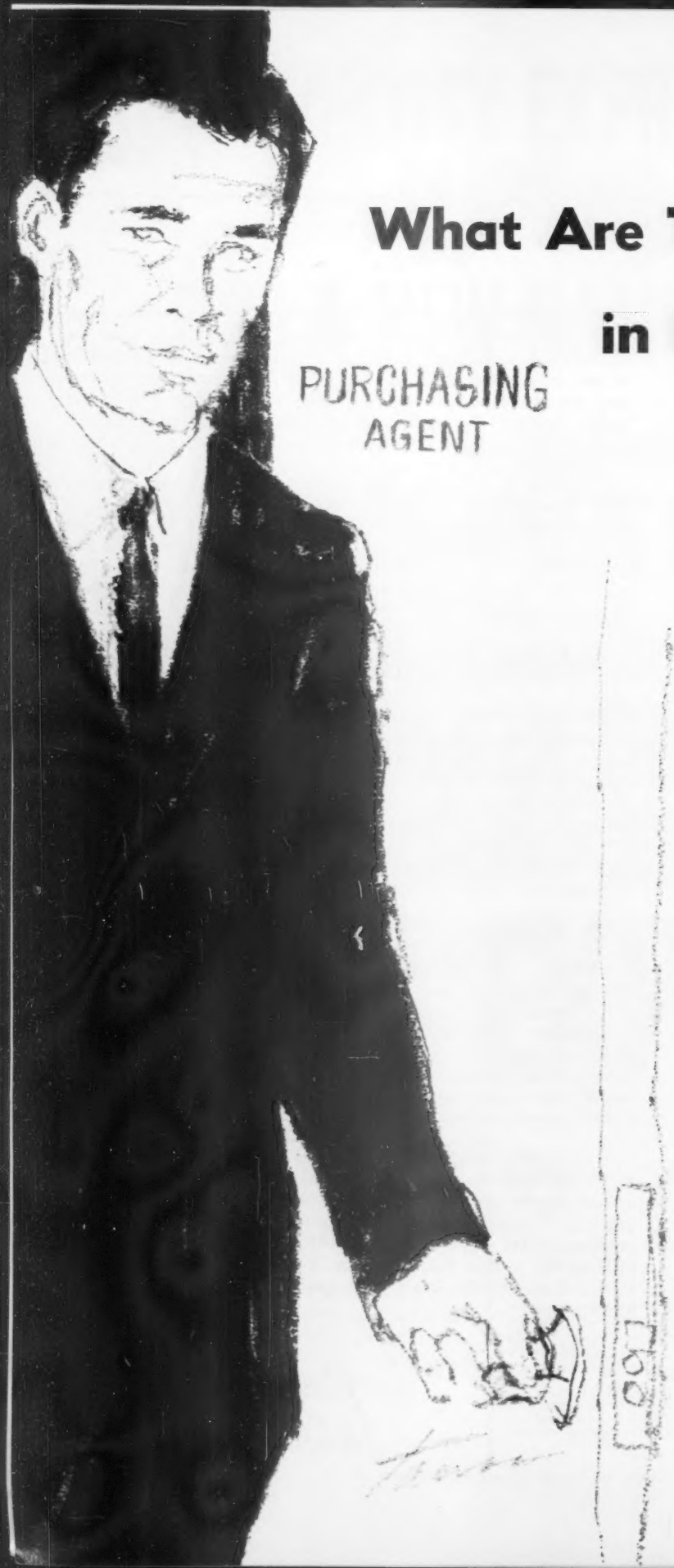
The evidence that purchasing, particularly, should by now have outgrown the idea of "enjoying" a buyers' market is all around us. A well-known company president reporting to stockholders says, "While volume is holding up fairly well . . . there are many companies which, because of the recession, are fighting hard for business and are thereby putting the whole industry in a profit squeeze." The purchasing agent of that company—and thousands like it—cannot afford to simply sit back and wait for suppliers to beg for business. He has to buy just as intelligently and aggressively as he does in good times—perhaps even more so. How well he does his job directly affects the success of his own sales force, out battling for business.

The emergence of purchasing as an active, profit-making function has probably helped destroy the fatalism implied in the concept of buyers' and sellers' markets. Larry Zahn of Ciba Pharmaceutical is one purchasing executive convinced that P.A.'s can do a lot to eliminate extremes in the business cycle. In a typical move, he recently wrote to all his glass container suppliers concerning a rumored price increase. He took the initiative in resisting any increase and made it clear that his search for value might take him into other materials if the rumor proved correct.

It is to this concept of purchasing that our annual special Value Analysis Issue, to be published May 8, is dedicated. It is built on the premise that modern purchasing people are willing to investigate new ideas, willing to take the initiative in the search for full value. The issue will be packed with practical information to help you do better. I urge you to study it and to use it as an effective tool to better purchasing and better business.

Paul V. Farrell

What Are They Paying in Purchasing?



PEOPLE AS precise about price as purchasing agents might well be puzzled by the current confusion over what their own services are worth. Purchasing salaries being bid, asked, and paid are inconsistent, to say the least. They range from excellent (from the P.A.'s point of view) to ridiculous (from almost anybody's point of view).

Purchasing agents and buyers can take the confusion as a hopeful sign, however. Some of them are still getting pretty miserable salaries, of course. But there has been a definite breakout on the up side from the rigid salary patterns of a few years ago. The width of the gap between the two extremes indicates that some fundamental changes are taking place.

Too Few Topflight P.A.'s

In market terms, the demand for capable purchasing people is spotty, but increasing. Supply is spottier, perhaps, but improving. Management's growing awareness of the purchasing function and the relative shortage of topflight purchasing personnel may keep them out of balance for some time.

These are some of the contrasts in the "purchasing market" turned up in recent conversations with personnel managers, P.A.'s, buyers, and management consultants:

— A West Coast electronics manufacturer, setting up a materials management system, wanted

Industry's Salary Offers Vary

Salary surveys in any field are useful, but they have their weaknesses. One of the biggest is the tendency of respondents to inflate figures on their own jobs. How do you discount some of the exaggeration that might creep into survey replies? One good way is to take a look at what companies are publicly offering for various positions. We analyzed recent employer ads in the Employment Service section of PURCHASING Magazine and came up with the following figures on purchasing price tags.

Buyers' salaries ran from $7500 a year for a **sub-contract buyer** in electronics up to $12,800 for a **senior buyer,** with broad supervisory responsibility in the consumer and industrial hard goods field. In between, an electronics firm offered $8500-9500 for a **buyer** with 4-5 years experience, and a general industrial firm offered up to $10,700 for a **buyer** with 4-7 years experience.

A **senior purchasing engineer's** job in a manufacturing firm was priced at $14,000 a year.

Top level purchasing jobs—purchasing agent, director, manager, etc.—have been running consistently in five figures.

A **purchasing agent's** job in the construction industry was listed at $10,000 a year. Another construction firm offered $15,000 to $25,000 for an experienced **purchasing director.**

The job of **chief purchasing agent** in the chemical and paint industry was listed at $11,000; a similar one in metalworking at $12,000. A minimum of ten years experience was required in the latter case.

A **"Purchasing and Procurement Top Level Position"** in general industry listed at $15,000-$18,000. Salary for a **general purchasing agent** in manufacturing listed at $16,000. An electric motor manufacturer offered $15,000-$16,000 for a **manager of purchasing.**

In general, salaries for **governmental and institutional purchasing positions** ran below those of industry: **buyers** were listed at $6000-$7000, **supervisory personnel** at $9000-$10,000. One outstanding exception: the post of **purchasing agent** for the Los Angeles School System, which pays $18,000 a year.

an assistant materials manager to take over the top job within a year or two. Salary offered: $12,000 a year.

— A materials manager in a large company, boss of several hundred people, was lured away to the top purchasing spot in another company by a salary of $16,000 a year.

— A Midwest multi-plant machinery manufacturer sought a director of purchases at $15-$20,000 a year. A fairly similar company in the East pays its top man about $15,000 a year, second man about $11,000, and third man $8000. An assistant purchasing agent at headquarters gets $6500, plant purchasing agents from $7000 to $9600.

— The purchasing agent of a service organization, who spends less than $2 million a year, receives $11,000 a year plus profit-sharing. He has taken on other duties in the company and has excellent chances for further advancement.

— A high purchasing job in the automotive industry, recently vacant, pays $75,000 a year, plus bonuses, stock options, and other benefits that could easily bring total compensation into six figures.

One has to be careful about generalizing from a few isolated cases. But there are enough indications accumulating to conclude that there is something stirring in the market:

- Companies like the electronics outfit mentioned above have recognized the need for good purchasing and materials management—but they're offering too little for what they want. A senior buyer or a P.A. with the experience the company sought for $12,000 a year could easily command $13,500 or more in some areas of the automotive or electrical industries.
- Many old-line manufacturing companies, particularly in the mechanical field, pay lip-service to the new concept of purchasing, but that's about all. The titles they hand out may be fancy, but the salaries are not. Seniority and political influence carry more weight than actual purchasing performance when salary adjustments are made.
- Some of the larger companies can attract and hold good purchasing and materials executives with only moderate salaries. Presumably the knowledge that they can advance steadily, even if slowly, and have reasonable security for the rest of their business lives is a strong attraction.
- The more glamorous consumer industries—automobiles, and appliances, particularly—and the aviation and electronic industries offer the best-paying purchasing jobs.
- An aggressive, intelligent and ambitious purchasing man can carve out a reasonably rewarding career for himself in industry—and not necessarily in large industry. More and more medium-size companies are willing to pay purchasing agents or directors of purchasing anywhere from $12,000 to $18,000 a year, with an eye to moving them further up in the company later on.

What about specific salaries in specific purchasing jobs? Here again, conditions and attitudes vary

(*Please turn to page* 204)

Purchasing Ties in With Manufacturing

"Integration with other groups is one of purchasing's major challenges," says a VP. By maintaining close liaison with operating departments and using modern methods and policies he has earned an influential position for purchasing.

By Ted Metaxas,
Midwestern Editor

FOR TEN YEARS, A. B. Chilcoat, vice president-purchasing for S&C Electric Co., wore two hats. He directed inventory control and scheduling as well as purchasing. This indoctrination in production needs and problems has helped him fashion a purchasing system that is truly manufacturing-oriented.

Though Chilcoat has now doffed his inventory control headgear, purchasing at the Chicago producer of high voltage electrical equipment continues to overlap into material control, manufacturing and engineering. Some of the S&C purchasing highlights include:

1. Across-the-board liaison with company and production management.

2. A purchasing order formula for traveling and other requisitions based on weekly requirements rather than specific pre-set quantities.

3. An auotmatic order writing system, using tape, edge-punched cards, and a Flexowriter.

4. Monthly reports to vendors, showing firm and forecast buying up to six months ahead.

5. A purchasing cost reduction program that will save an estimated $70,000 in 1960.

With S&C for 15 years, Chilcoat ranks high on the management roster. His initiative and his interest in overall operations have made purchasing an influential partner in production and engineering.

"We are a medium sized plant (600 employees) and our volume of purchases is not astronomical," says Chilcoat. "We buy about 5000 items. Considering that much of our production involves custom assembly of standard products, our ability to adopt all of the latest tools of purchasing is somewhat limited. But we do use as many modern and mechanical methods as possible."

The Big Challenge

Chilcoat believes the task of integrating purchasing to other departments is "one of the challenges facing every purchasing agent today." He fills a permanent seat on S&C's production advisory committee, comprised of the president, representatives from sales, marketing, engineering, manufacturing, production control, and purchasing.

Meeting monthly, this summit group charts inventory requirements on the basis of projected orders and production schedules. It also discusses design and engineering changes, improved production methods, and other developments. Minutes of the meeting go to executives and supersors so that the entire command is alerted.

Though production quotas are projected six months ahead, they are reviewed and can be adjusted at each monthly meeting. Chilcoat presents purchasing factors to assist in making realistic inventory calculations.

Coordination also goes on at the buyer level. Chilcoat's buyers serve on plant committees, including manufacturing planning and product cost control.

Starting the materials cycle is the manufacturing planning committee which firms up specifications, design, and production methods for new or modified prod-

ucts. Here, purchasing advises on make or buy, tolerances, materials, delivery dates, etc. Tooling, time study, production, and project engineering are also represented.

Purchasing also attends weekly meetings of the product cost control committee which reviews and improves current manufacturing costs of established products.

Chilcoat maintains friendly liaison with research and development, engineering, and manufacturing. Always on the prowl for better materials and methods, purchasing screens vendors, directing those with cost cutting ideas to proper plant people.

Recently, a supplier suggested that new advances in cold heading now made it possible to fabricate parts that could not be considered before. To test this claim, Chilcoat submitted a fairly complex, hot forged part to the vendor, who returned with a cold headed duplicate.

Costs were halved, saving over $25,000 per year.

"Supplier processes don't stand still," remarks Chilcoat. It's up to us to keep current on technical processes and to seize on new materials and methods before the competition gets them."



Vice President-Purchasing A. B. Chilcoat, left, discusses new cold-headed part with C. H. Baker, director of engineering. Switching the fairly complex part from a forging saves S&C more than $25,000 a year.



Chilcoat stays well-informed on performance of purchased parts in manufacturing. Here he examines a porcelain component with E. R. Beebe (l.), general supervisor of metalclad switchgear.

Min-Max Is Useless

Chilcoat believes minimum-maximum reorder quantities are useless when production volume dips and rises frequently, so he tailored a purchase order formula based on weekly requirements. The formula is noted on each traveling requisition to help production control determine when and how much to order. For stock items not on traveling requisitions, Chilcoat has a manual listing specific purchase formulas for individual materials.

Elements of the formula include:

1. Procurement time—Expressed in weeks or days, it spans the time from issuance of the order to arrival of material at the dock.

2. Cushion—Indicates the time required for internal processing of requisitions and orders; receiving and inspection, and scheduling of materials.

3. Order point—Shows the reorder points, specified in terms of weeks' or days' supply, considering on hand and on order factors.

4. Maximum coverage—Shows the total supply requirement desired.

5. Scheduling quantity—indicates the weeks' or days' quantity to be delivered on a specified date. To determine this amount, factors of procurement economy, material handling, and inventory costs are evaluated.

The purchasing order formula is subject to periodic scrutiny and is changed to reflect market and supplier conditions.

For further flexibility in ordering, production control reviews traveling requisition data each month to see if scheduled deliveries conform to actual production needs. The form contains columns to permit notation of rescheduled orders—subject to review and action by purchasing.

Production control issues monthly group requisitions which

S&C ELECTRIC COMPANY

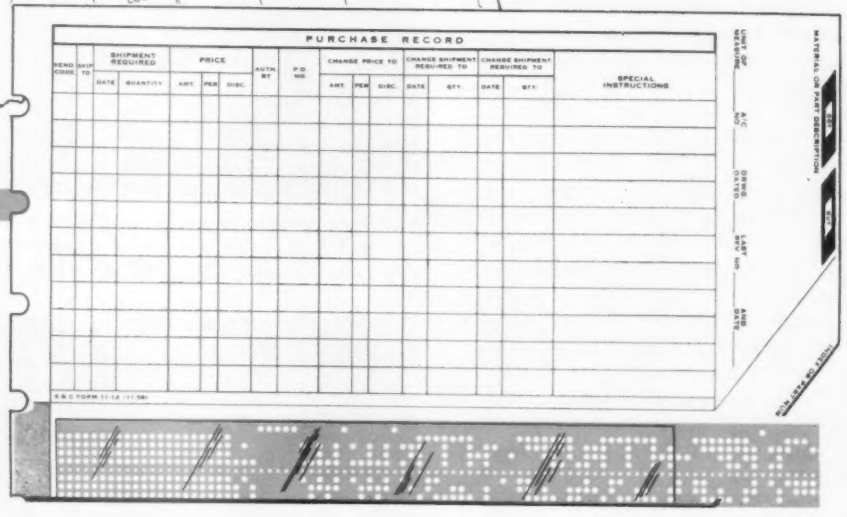
REQUIREMENTS OF STOCK PORCELAIN

As of: November, 1960

PREPARED ON: 11-4-60

S&C DESIGN PART NO.	VENDOR'S PART NO.	FOR THE MONTH OF Nov.	Dec.	Jan.	Feb.	Mar.	MONTHLY THEREAFTER
P-1000	L3500	792	1004	880	880	880	1200
P-2000	L3550	587	440	500	500	500	600
P-3000	L3600	2570	2000	2000	0	1000	1000
P-4000	L3650	165	280	240	0	220	220
P-5000	L3700	5785	6800	7200	7200	7200	8000
P-6000	L3750	0		160	160	160	220

Suppliers applauded when S&C began to send them monthly forecasts of specific purchases for up to six months ahead. Sample form shows firm and estimated buying quantities from a vendor.



Key card for S&C's automatic order writing system is purchase record. Plastic pocket holds punch tape with specs and other parts data. Vendor edge-punched cards used with parts tape in Flexowriter produce purchase orders in continuous form.

MAT'L. DESC. P.C. GRP. DATE PREPARED AS OF APPROVED BY P.O. NO.

GROUP PURCHASE REQUISITION

STATUS BY MONTH

INDEX / PART NO.		NOVEMBER 5	12	19	26	DECEMBER 3	10	17	24	31	JAN 61	FEB	MAR	APR	TOTAL
	GROSS REQUIRM'T														
	ON HAND														
	ON ORDER														

Monthly group requisitions are issued by production control to consolidate varying sizes in the same class of materials. Purchasing staggers shipment by week for first two months and monthly for four months.

consolidate all the varying sizes of categories of materials. Part numbers, gross requirement, on hand inventory, and on order amounts are filled in by production control.

When it gets the group requisition, purchasing must stagger purchases on a weekly basis for the first two months and on a monthly basis for the following four months. With six months of purchases plotted, fewer and larger buys can be made to gain discounts and improved delivery.

Chilcoat projects purchases for individual vendors up to six months ahead. He sends out buying forecast forms each month on both fabricated and off-the-shelf items.

The first three months purchases are considered firm buying commitments and are based on purchase orders which have been mailed or soon will be forth coming. Monthly estimates are made in the following forecasts.

Says Chilcoat: "By sending our supplies monthly projections to reflect firm and estimated business with S&C, we allow them to plan ahead in materials, scheduling, and manufacturing methods. We both benefit. Vendors appreciate such notification. I know some of them have sought to convince their other customers to adopt the same tactics."

The forecast form for fabricated parts leads off with the S&C part

(*Please turn to page* 186)



How Engineers Can Help the P.A.

An engineer takes a look at purchasing and comes up with some specific recommendations on what engineers can do to help purchasing and, as a result, help themselves.

By Frank W. Wood, Jr.,
President,
Advanced Designs, Inc.

THERE WILL probably always be friction between engineering and purchasing. There are just too many differences in the problems they face, the way they look at things, the role their departments play in the company. But they are both working for the same goal: a better product at a lower cost. This means it will pay off for both if they can find a way to work together.

The cause of many of the problems that exist between purchasing and engineering is a breakdown in communications. The P.A. and the engineer just don't get through to each other. What can engineering do to help overcome the communications barrier? Here are a few basic suggestions:

(I) Include purchasing in any preliminary discussions on new products, design changes, etc.

This first step makes it certain that purchasing will not be hit cold with a requisition for a project it knows nothing about. If purchasing gets advance briefing it can often spot serious omissions or ambiguous specifications on the purchase request.

(II) Respect purchasing's paperwork or red tape as engineers often call it.

Engineers just don't seem to realize that much of purchasing's paperwork is necessary to meet the demands of the accounting department.

For a Report on Purchasing Salaries See p. 70

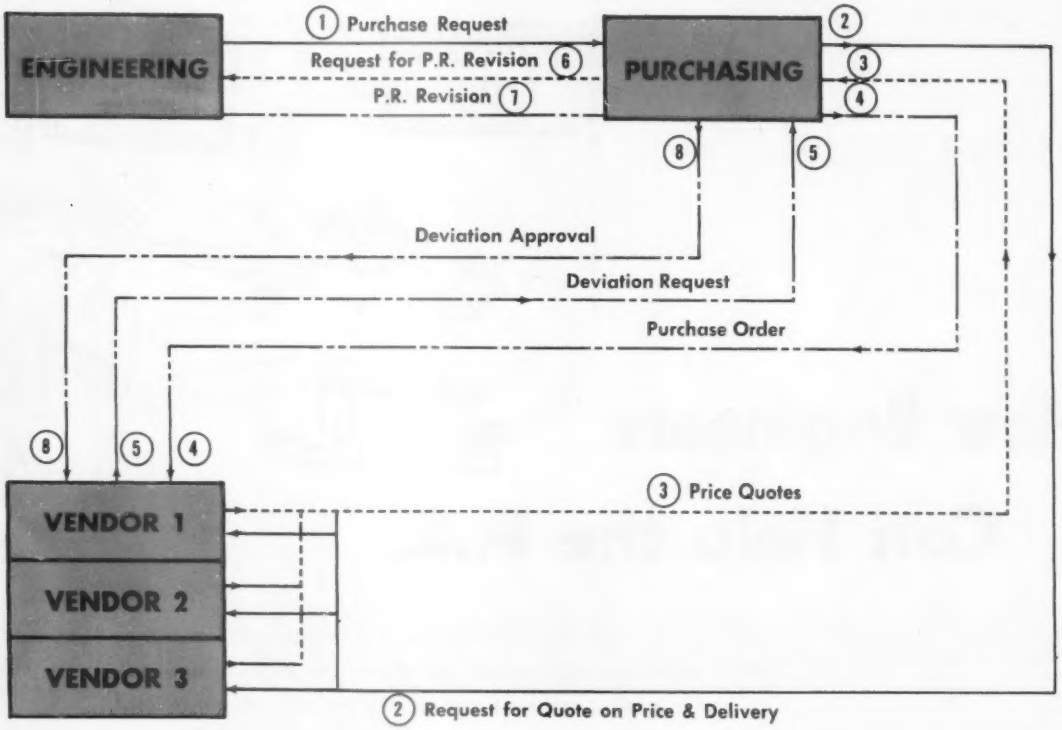
(III) Channel all follow-up requests for information concerning an order through the purchasing department (see chart p. 76).

When two parties are telling a third party what to do, the third party usually becomes confused. If in some cases it is necessary for engineering to dicuss a tricky specification with the vendor, have purchasing listen in on the conversation. This may seem a nuisance and a waste of time when dealing with an urgent schedule, but it will eliminate the possibility of mixups occurring later on.

(IV) Be sure to supply complete information on all forms forwarded to the purchasing department.

(A check list similar to the one shown will cut down on mis-

Breakdown on Purchase Order Paperwork



takes and failure to supply adequate information.)

Here's an analysis of the purchase requisition which should help engineers understand the what's and why's of purchasing's requirements:

The Purchase Requisition Form should contain all the information the purchasing agent needs to buy a specific item without having to check back with the requisitioner. Eliminate generalities on the purchase requisition because they cause confusion. Be specific, remember that the purchasing agent may not know that you can use a 400-volt capacitor just as well as you can a 450-volt unit unless you specify limits on the requisition.

Purpose of the Requisition. Used to authorize purchasing to buy any material, equipment or services required for operations and execution of contractual work.

Form Description. Purchase requisition (P.R.'s) consist of serially numbered sets of three sheets, marked "Original", "Purchasing

For Engineers: A Purchase Requisition Checklist

Before routing a requisition to purchasing, engineers should check their request to make certain they have covered these 11 vital points:

- ☐ Check Job Charge No.
- ☐ Check Completion Date
- ☐ Check Source Inspection Note
- ☐ Check Consignee. Include Inspection if appropriate.
- ☐ Check Note on Conflicts
- ☐ Check Certificate of Compliance Note
- ☐ Check mention of Drawing Numbers
- ☐ Check description and wording
- ☐ Make Sure drawings are furnished including copies for Inspection, if needed.
- ☐ Check "Make or Buy" Decision Statement
- ☐ Exceptions to Specifications as Applicable.

Copy" and "Requisitioners Copy", respectively.

Responsibilities for the Requisition. The originator of a P.R. can be any employee requiring material or equipment for company operation or execution of contractual work. The one who approves a P.R. must be authorized to sign for the total dollar amount of the P.R.

Filling out the Requisition. The originator fills in the following information:

(1) Requisitioner—Originator's name.

(2) The Consignee—Who is to receive the material delivered by the supplier.

(3) Job Number — Complete company assigned Job No. with sub-charge.

(4) Date—Current date.

(5) Date Required—The latest date that material can be in and still meet job requirement.

The date required is second in importance only to the description of the item being purchased and should be based on actual requirements. An unrealistic "Date Required" can cause the cost of an item to spiral upward due to the special attention the order will receive from purchasing.

(6) Description of the items requested should contain the following minimum information in the same order:

(a) Name and Physical Description.

(b) Specifications.

(c) Manufacturer's Name and Part Number.

(7) The term "Or Equal" should follow the Manufacturer's Part No. if an exact equivalent from a different manufacturer will be acceptable.

(8) The number of Items on one P.R. are limited only to the space available. The following breakdown will simplify handling by the purchasing.

(a) Use alphabetical item designation; A B C, etc. omitting the letters I and O. After Z use AA, after AZ use, BA, etc.

(b) Group like items.

(c) Use separate P.R. for different groups containing a large number of like items.

PR NO 2473

PURCHASE REQUISITION

REQUISITIONER F.W. WOOD CONSIGNEE INSPECTION/D. LONG DATE 4-8-60

DATE REQUIRED 4-25-60 SHIP TO S.S.I. JOB NO. 04-1600.0603

ITEM	QUANTITY	DESCRIPTION	ESTIMATED COST UNIT PRICE	ESTIMATED COST EXTENSION	PURCHASE ORDER NO.
A	12	CAPACITOR, TUBULAR, FIXED, WITH INSULATING SLEEVE .22 MFD., 400 VOLTS D.C. SPRAGUE NUMBER CP09A1EE22WK OR EQUAL			
B	4	TUBE, ELECTRON NO. 2D21, H.G.A.			
C	1	PANEL, FABRICATED AND ENGRAVED PER VITRO DWG.NO. 1600 B 2004, REV. B.			
D	2	GEAR, SPUR, PRECISION 10, 48 D.P., 40 TEETH PIN HUB, 2024-T4 ANODIZED ALUMINUM, PIC DESIGN CORP. #02-40 OR EQUAL			
E	20	SWITCH, TOGGLE, D.P.D.T., MOMENTARY ON-OFF-MOMENTARY ON, SCREW TERMINAL, PER MILITARY STANDARD MS35058-7			
		NOTE- Government Certificate of Compliance required on Item E.			

THE ABOVE HAS BEEN DISCUSSED WITH MR. T.G. PETERS PURCHASING DEPT. ESTIMATED TOTAL COST

SECURITY CLASSIFICATION ☒ NONE ☐ CONFIDENTIAL ☐ SECRET

SUGGESTED SUPPLIERS

ITEMS A,B,E, - KENYON ELECTRIC SUPPLY COMPANY
C, - MILTON H. BROOKS & SONS
D, - PIC DESIGN CORP.

AUTHORIZED SIGNATURE UP TO $50.00
AUTHORIZED SIGNATURE UP TO $200.00 — DATE 4-9-60
AUTHORIZED SIGNATURE UP TO $500.00
AUTHORIZED SIGNATURE OVER $500.00
OTHER

ORIGINAL

Sample of the way a purchase requisition should be filled out by engineering before it's sent to purchasing.

Special requirements. Military Source Inspection when required must be stated on the P.R. and must bear the approval signature of the Quality Control Chief or the TS Department Head in addition to the normal required approval signature. Government Certificates of Compliance when required should be stated at the bottom of the P.R. as follows:

"Government Certificate of Compliance Required on Items A, B, D."

Distribution of Requisition. Copies marked "Original" and "Purchasing" go to purchasing. Copy marked "Requisitioner" is filed by the originator under applicable job record. In cases where a buy is made to a drawing, four (4) copies of the drawing must be supplied to the procurement group with the P.R.

As I pointed out in a previous article ("Let's Give Purchasing a Fair Shake," PURCHASING Magazine, November 23, 1959), the word "planning" seems to be slipping from the engineer's vocabulary. He rushes into projects without realizing that his haste will snarl everybody else up and delay successful completion of the job. Purchasing suffers from this attitude, so it is no surprise that buyers sit on purchase orders until they are sure engineering won't be making any last-minute changes to its specifications.

Proper requisitioning is simply a part of good planning. By following the suggestions above, engineers can help purchasing with its paperwork and ultimately make things easier for themselves. ► END



Several shippers' associations will often have the same receiving agent, particularly in a large city. A dozen or more associations operate out of this one receiving area in New York City.

Lower Freight Rates— But Are They Legal?

You can get carload freight rates on LCL shipments if you're a member of a shippers' association. But be careful whom you associate with. The Interstate Commerce Commission has begun a crackdown on those operating outside the law. Here's the story:

By Thomas F. Dillon,
Associate Editor

NO ONE wants to pay less-than-carload freight rates if he can get carload rates—particularly if his competitors are getting the lower rate.

Many firms, perhaps some of your competitors, are paying carload rates for less-than-carload shipments. Some are doing it legally. Others are doing it—but in violation of the Interstate Commerce Act.

The paradox revolves around a relatively new development on the transportation scene—the shipper association. The shipping association is theoretically a group of shippers who consolidate or distribute freight for members. According to the Interstate Commerce Act definition, the consolidating and distributing is done, "on a *non-profit* basis for the purpose of securing the benefits of carload, truckload, or other volume rates. . ."

To understand how the associations came into being, it will help to go back to 1942 when freight forwarders first came under the Act. Freight forwarders have no carriers of their own, but group small shipments from a number of sources and ship them at carload rates on established carriers. Using freight forwarders the small shipper can obtain carload service which is often twice or three times faster than LCL service. He also runs less risk of damage, since his shipment is handled fewer times.

When the forwarders came under regulation, a special exemption was provided for groups shipping on a "non-profit basis": they were exempt from the provisions of the Interstate Commerce Act.

This exemption, originally inserted into the act to preserve the freedom of comparatively few non-profit associations existing at the time, has suddenly borne fruit. Within the past four years,

"The shippers' associations' exemption from the Interstate Commerce Act has been praised by some shippers, damned by others. It has been abused . . . and is now the subject of an ICC investigation. Meanwhile, some P.A.'s are finding the associations an answer to rising transportation costs."

shipper associations have flourished remarkably. The exemption has been praised by some shippers, damned by others. It has been abused by illegal profit-making associations, and it is now the subject of an Interstate Commerce Commission investigation. Meanwhile, some P.A.'s are finding the associations it spawned an answer to rising transportation costs.

Forming an Association

The associations are often sponsored by industry trade groups as a service to members. They can be founded by anyone and will be within the exemption, provided they are operated on a non-profit basis. For example, a traffic manager gets together with representatives of other companies and discusses the common points to which they ship or from where they receive supplies. If enough interest is generated, an association is formed. Usually, a lawyer is brought in and a non-profit corporate charter applied for. A manager is appointed.

Next, an agent to actually handle the consolidating of the members' freight will be hired. He usually operates a small local trucking company and offers pick-up and delivery service. He may be located on a rail siding, and will make all arrangements with the railroad for the furnishing and delivery of railroad cars. Similar agents are set up at the destination cities to which the members ship.

The association member saves the difference between the less than carload rate and the carload rate plus a nominal service charge. Savings often run from $1 to $2 per hundred pounds.

What helps the associations grow? (An estimated 250 to 300 now exist in the United States.)

1. The sizeable increase in LCL and LTL freight rates since World War II, in some cases amounting to over 100%.
2. The development of piggyback (trailers on flat cars) service, particularly Plan III and Plan IV piggyback. Rates for such plans are on a flat charge per car, regardless of the commodity shipped.
3. The recognition by many companies that transportation is one of the few remaining areas where costs can be reduced.
4. Competition.

Who profits most from the association concept?: association members, the small trucking companies or cartage agents who perform the assembling and distribution work at origin and destination, the railroads, and "illegal" shipper associations which are sprouting like weeds on a summer lawn.

The obvious losers are the regulated freight forwarders, and the long haul truckers. And they say that the transportation system of the United States and the public will eventually lose.

Gripe About Sharpies

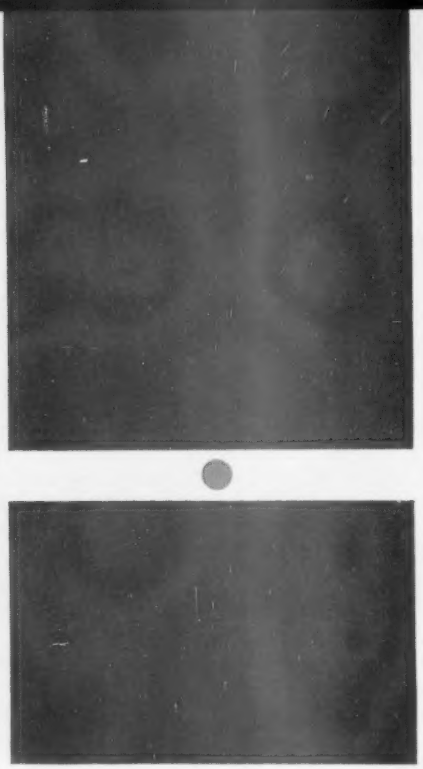
Officially, the regulated freight forwarders, chief opponents of the shipper associations, hold no ill will towards the legitimate "non-profit" associations. Their chief gripe is against the smart operator who has gotten a hold of a good thing and is making a small fortune on their lost business. One such operator started with a $100 loan, and a room in his basement, and in less than one year was netting close to $40,000, according to one story going around.

It is a simple matter for a traffic-wise employee of a regulated freight forwarding company to line up a few selected shippers and sell them on the advantages of forming a *non-profit* association. He is appointed the manager of the association, arranges to be paid a salary as manager or is paid on a basis of so much per hundred pounds. Meanwhile, he turns in his resignation to the regulated freight forwarder. Since there is much disagreement as to at what point a "salary" for the manager becomes a "profit", there's a good deal of confusion as to the non-profit status of such associations. At the same time, many members of such illegal associations are only concerned with

(*Please turn to page* 194)



" . . . every truckload is chock full of nuts."



The Facts About Executive Tension

How much of a problem are the stresses and strains of executive life? What's different about the purchasing agent who worries himself into the fidgets and the one who takes his job in stride? Is there anything that can be done for the executive who's having tension troubles? Here are the facts.

By Ned Kellogg,
Managing Editor

PURCHASING is a pressure-cooker job. There's never enough time, too many people to see, too much paperwork, too many important decisions to make. It's no wonder the average P.A. thinks of purchasing as an ulcer-making profession.

But the truth is that the popular image of the P.A.—or any other executive for that matter—as being a harried, overworked, pill-gulping complex of tensions is plainly the product of Hollywood and the best sellers. If anything, the average executive is somewhat colorlessly well adjusted. He suffers little stress or tension from his job and his health is about average for his age group. If he's a top executive, the chances are that he may be even a little healthier than the norm.

Much work has been done in recent years to find out if there is any factual basis for the belief that the executive's job makes him especially tension-prone. The findings indicate there isn't. In the most extensive study made on this subject, Life Extension Foundation, Inc., came up with the following facts based on a survey of more than 6000 businessmen:

— Only 13.3% of the executives studied say they work under constant stress.

— 78.5% don't feel they work too hard.

— More than 75% like their work and don't worry about the demands of their jobs.

— Fewer than 20% said they had personality conflicts with their business associates.

— 85.7% report they have a feeling of security in their job.

— 74.1% report no major office problems.

— 87% say they don't worry too much about the decisions they make.

— 80.7% have no fears about not getting enough work done.

— And in digging into the home life of the executive, Life Exsion Foundation study shows that 82.1% feel their wives' attitudes toward their careers are "encouraging and helpful." Eighty-five percent say the are free of serious home worries. Only 6.4% report that their wives are not completely satisfied with their business progress.

The Bulging Brief Case

The study goes on to picture the executive as a man who does not carry a full brief case home every evening, who averages no more than two business luncheons and one evening business date a week, and who rarely spends more than one to five days a month away from home because of business. The average executive has fairly good health habits: he doesn't drink heavily (90% do not usually have cocktails at lunch; two-thirds don't feel the need to unwind with a predinner cocktail). They sleep well—an average of 7 hours or more a night, and only 4.6% are on tranquilizers.

M.D.'s Debunk Old Tales

This study, which takes the steam out of the pressure cooker concept of executive life, is thoroughly supported by research carried out by the medical departments of many of the larger corporations and the statistical data compiled by insurance companies. These sources contend that tension diseases—coronary thrombosis, high blood pressure, hypertension, peptic ulcers, arteriosclerosis, diabetes, hay fever, asthma, arthritis—are no more prevalent among executives than they are among men in other occupations.

Item: A study made by the Du Pont company indicates that top executives are less likely to suffer heart disease and high blood pressure than other employees.

Item: National Office of Vital Statistics reports that men holding managerial, administrative, and technical jobs have a lower than average mortality rate.

Item: Insurance premiums for executives are scaled at the lower level: In line with this, Dr. Thomas Sexton, a vice president of the Massachusetts Mutual Life Insurance Co., says medical examinations show that executives are no more prone to stress than non-executive groups. Dr. Sexton states that ". . . tales of hard-drinking, ulcer-ridden, portly executives are largely myths which either belong to the past or have never been fully substantiated. "On the contrary," he says, "there is considerable social pressure on the successful businessman or executive to avoid excessive drinking, get regular health checkups, and to keep his weight down."

Famed heart specialist Dr. Paul Dudley White also pooh-poohs the health dangers of executive life. Says Dr. White: "As a group, executives are probably not much more—or less—subject to heart disease than other men in their age groups."

Even the much-fabled ulcer of the advertising executive has been debunked. A survey made by the advertising trade journal, *Tide*, shows that only 4% of the 1100 admen taking part in the study had ulcers.

Personality Is Main Factor

What all this research indicates is that when an executive suffers from tension it stems from within himself—his own personality—rather than from the stresses peculiar to his job. It seems highly probable that the purchasing executive who is under excessive tension would probably feel the same way if he worked in the storeroom.

In the Life Extension Foundation study, which showed that only 13.3% of the executives surveyed felt they were under constant tension, some definite patterns emerge:

— Three-and-a-half times as many executives under constant tension say they are working too hard compared with those reporting little tension. But the figures show their average workday is about the same for both groups. And the tension group does only slightly more office work at home than the majority.

— There is no correlation between tension and the type of executive job—creative, analytical, personal contact or positions with multiple responsibilities.

— Tense executives are more bored with their jobs, feel greater job insecurity, are less satisfield with their business progress. They have greater aversion for business entertainment, business travel and business homework. They report more personality conflicts with business associates, have poorer living habits (smoke more, drink more, get less sleep, less exercise, eat faster, are more likely to take sedatives and tranquilizers).

Tense Execs Earned More

The danger of tension of course, is in its degree. The executive who is relaxed to the point of apathy obviously isn't going to get anywhere. The right amount of tension on the other hand provides interest, ambition, excitement. Often, in the extremely tense executive, it is the same strong neurotic drives that now have him in trouble that were responsible for his getting ahead. In line with this, the Life Extension Foundation study shows that the incomes of executives in the

The tense executive is likely to be bored with his job, feel dissatisfied with his progress, and have frequent personality conflicts with his associates.



The Shriek by Edvard Munch (detail section). Collection Museum of Modern Art, New York. Matthew T. Mellon Foundation.

The Shriek, a lithograph by the Norwegian painter Edvard Munch, reflects the artist's concern with mental turmoil—a characteristic of his neo-impressionistic work during the 1890's. For many observers *The Shriek* graphically portrays the emotional strains and stresses caused by the industrial revolution. Munch's work is represented in numerous galleries in the U. S. and Europe.

tense group averaged more than $14,000 a year—slightly higher than for the group as a whole.

What makes some executives more tension prone than others? According to Freud, a person's orientation to a normal or a neurotic way of life is determined by the age of 5. This would seem to mean that if you're a tense person it's a basic part of your personality and you are stuck with it. There are, of course, many things that can be done to help a person reduce his tensions before they become a serious problem.

Danger Signals

Basically tension is internal stress caused by the inability to cope with the problems of daily life—both on the job and at home. In can also be defined as the rate of wear and tear caused by life. In the extreme case of the neurotic executive who is heading for a nervous breakdown, this is what happens: the stresses of living finally intensify his own inner conflicts to the point that he can no longer cope with them. He loses interest in outside activities, his social life goes, his marriage may break up and finally he's unable to meet the demands of his job. In most cases tension does not reach this point, but the effect of continued stress on a person takes its toll of the body in the form of heart trouble, high blood pressure, etc.

What Causes a Crackup?

The importance of personality and its relation to stress ailments are indicated in research carried out by the Institute for Psychoanalysis in Chicago. The study shows correlation between certain personality characteristics and specific diseases. Examples:

Ulcerative colitis is frequently found in people who continually face challenging situations they don't feel they can cope with. The physical ailment usually shows up after the person has given up hope of being able to do his job.

The coronary personality seems to be either over-rebellious or over-submissive in reacting to authority.

The ulcer-type may appear to be aggressive but is really dependent, wants to be loved and to be taken care of.

Hypertension is common in people who give in even when they strongly oppose what they are acceding to. Problems develop when they can't express their resentment.

Asthma is thought to stem from fear of separation from the mother image.

Rheumatoid arthritis — correlates with people who were restricted by overly domineering parents. The symptoms appear when they are frustrated in their attempt to express their resentment by controlling others.

Among the early warning signals of unhealthy tension are changes in behavior. The individual may become increasingly irritable, moody, indecisive, bored. He will probably step up his drinking and may become dependent on alcohol without realizing it. (One way to find out if alcohol is becoming a potentially serious problem is to see if you can stop drinking completely for a three-week period every year.)

Other symptoms of excessive stress: headaches, temporary stomach upsets, insomnia, chronic fatigue, loss of memory, inability to concentrate.

Try Falling in Love

What can the overly tense executive do? Freud has suggested that one of the best cures for neurosis is to fall in love. However, this may be difficult and it has been found that wives of highly tense executives oppose this remedy. More practically, the executive should have a physical checkup. If he's found to be suffering from one or more of the stress-related diseases, his doctor will undoubtedly tell him to improve his living habits:

Lose weight

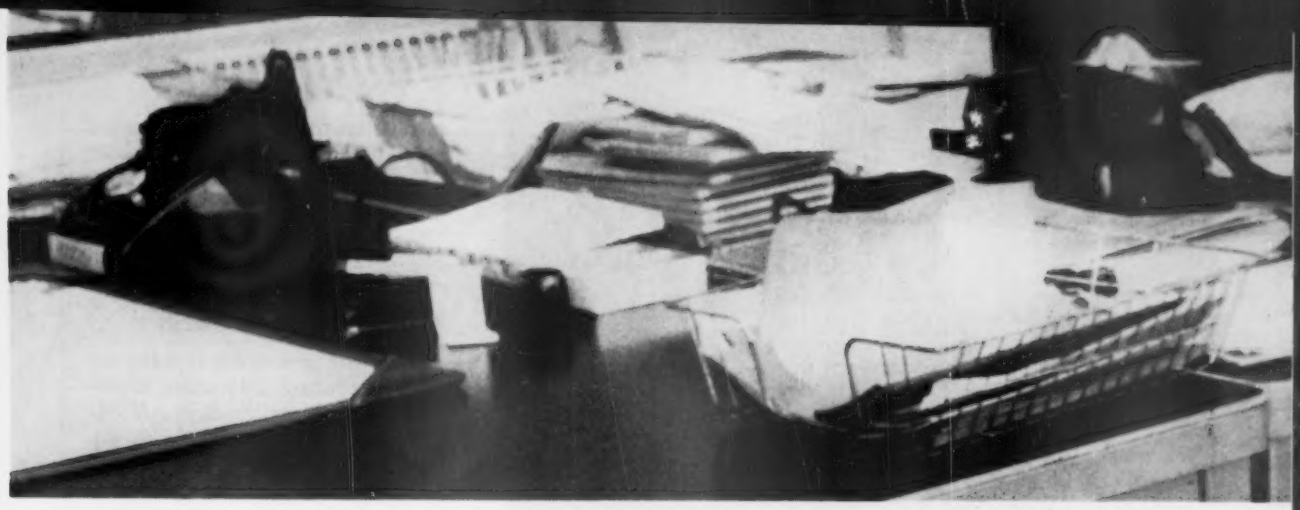
Reduce fat intake

Cut down on tobacco, alcohol and coffee

Get more sleep; exercise more

These are health rules that everyone knows, but they become increasingly important for the

(*Please turn to page* 188)



Better Filing Helps Cut Inventories

When Beech Aircraft Corporation switched to a more efficient filing system, it found it could eliminate shortages and at the same time slash its non-productive inventories a total of $400,000

By Lee Huffman,
Assistant Manager of Procurement,
Beech Aircraft Corporation

A NEW FILING system for purchase order follow-up in our Beech Aircraft materials division has virtually eliminated shortages and slashed our non-production item inventories from $500,000 to $100,000. In addition, the system provides us with such tight purchase order follow-up that we need only a 1.4 months inventory of production raw materials.

Our buyers, who are responsible for 200 to 4500 items, are now able to go through their entire files on a daily basis. Many can cover in a few hours what formerly took as long as two weeks. This closer follow-up results in better service to our customers as well as lower inventories.

By spotting potential shortages in advance, we've cut the number of emergency air shipments. This alone saved us the price of the close to 40 new visible-vertical files that make up our system. In addition, the new procedure gives us price histories—which help the buyers keep prices down—and vendor performance records, which help us get rid of unsatisfactory suppliers.

The responsibility for meeting the needs of our manufacturing facilities belongs to the materials division. This division controls three principal types of items, with a total inventory of $4 million:

(1) Production—About 40,000 purchased parts and raw materials required to produce our airplane.

(2) Usage—About 5000 low-cost, hardware items.

(3) Non-Production — General supply items for maintenance and repair.

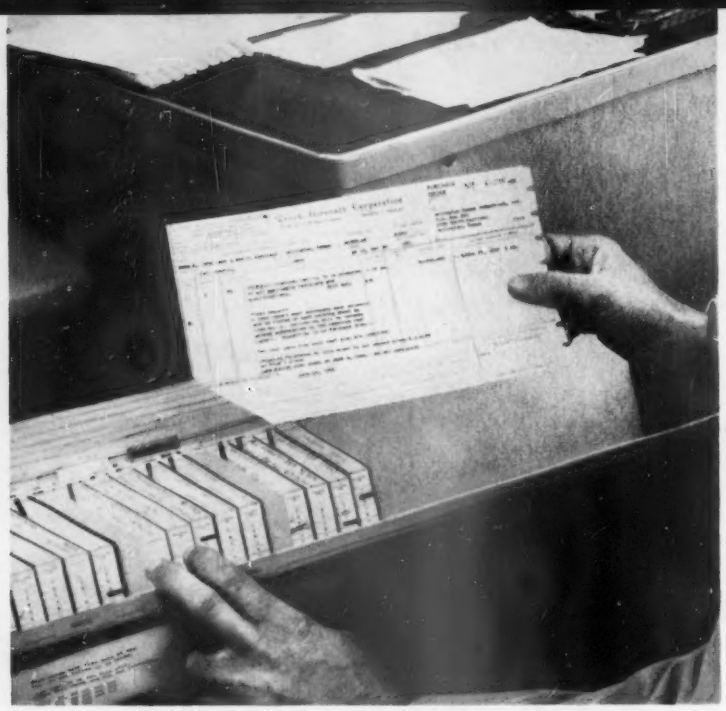
Beech decided that it had to improve its purchase order follow-up system. We wanted to obtain tighter controls over follow-up and, if possible, reduce our inventory requirements. All of these benefits resulted with the installation of VISIrecord visible-vertical files.

The VISIrecord units are mobile, desk-height, tub-type files, which are located alongside each buyer's desk. The buyer always has his records within arm's reach of his desk. He no longer has to leave his desk, go to a drawer file, search out the appropriate file folder to get the information he needs.

Helps Find Cards Quickly

Each file has a capacity of 1500 item cards. The cards are notched along the bottom edge and rest on edge-protecting corduroy and straddle guide rods. The rods not only position the guards and help return the cards to the file, but also provide a means to offset the cards horizontally. This horizontal shingling provides a visible ¾-inch margin for each card.

To aid in locating cards, main and intermediate dividers are provided. Each main divider carries index information in a transparent plastic strip along the top edge.



Purchase order follow-up cards are easily located in this VISIrecord file. This is the reverse side of the card which has a photocopy of the original p.o., eliminating the need for a separate file.



Visible margins on the follow-up cards make it possible for buyers to scan the entire file in a few minutes. Tabs are placed along records which have been flagged for action.

To find a specific card, a buyer only has to flick open the file at the appropriate index tab to expose the record he is seeking. He can locate any card in three seconds.

File Designed for the Buyer

The file is designed so that no matter where it is opened, it forms a 40 degree "V" area which makes it possible to see an entire row of records at one glance. This leaves the buyer's hands free; he doesn't have to hold the file open with one hand while searching or working with the other. Neither records nor dividers are fastened in the file which makes expansion or contraction a simple matter.

In most cases, the visible margins on the p.o. follow-up cards contain due dates. These dates are flagged with metal tabs, showing what items need follow-up on a particular day. A buyer can scan his entire file and pull orders requiring action in a few minutes. To assist in refiling, an "out" signal appears automatically when a card is pulled from the file. With this system each buyer can do in hours, work that formerly took several days.

Here's a rundown on each type of material purchased and a comparison of the filing system being used with the method formerly employed:

(1) Production—We have 15 production item buying groups, each composed of a buyer, an analyst, and a secretary. The buyer receives a purchase requisition and is responsible for filing the requisition, preferably through competitive bidding.

Prepare Follow-Up Cards

When he writes a purchase order, scheduling shipments to arrive on a particular day, a VISIrecord purchase order follow-up card is prepared. It measures 7 by 11 inches, has the vendor's name and purchase order number typed on the upper right, cross-cut corner where they will be visible while the card is in the file.

Once the purchase order has been issued, a duplicator copy is used to reproduce the order on the back of the card. The card is filed alphabetically by vendor and numerically within the vendor category by purchase order number.

The months of the year and the odd-numbered days of the month are printed on the visible margin at the right of the cards. Colored metal tabs are placed on the day and month to flag attention for follow-up—one week prior to scheduled delivery for out-of-town vendors, two days for local vendors.

Phone Local Vendors

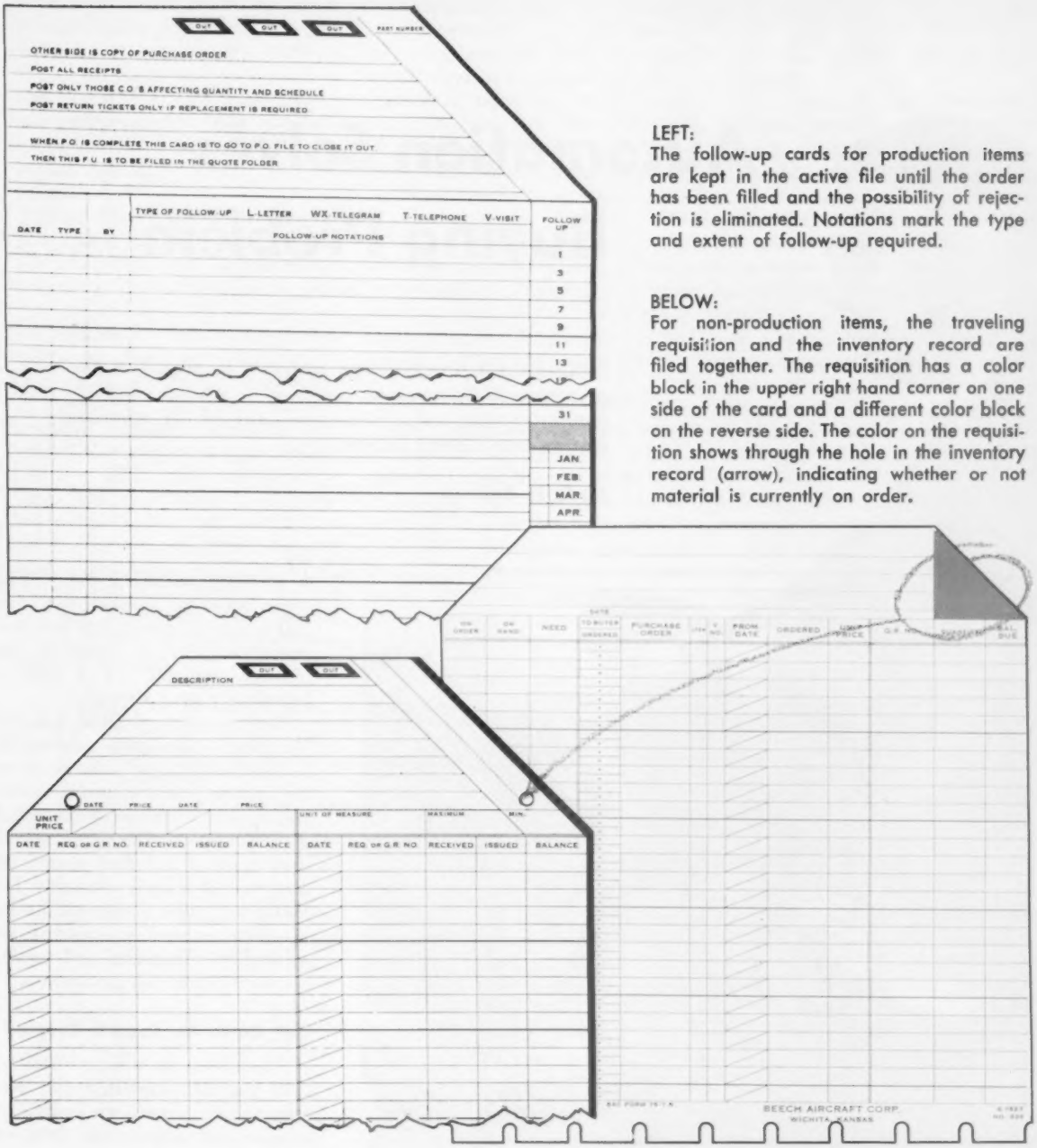
The first follow-up consists of a two-part postcard for out-of-town vendors. Local vendors are phoned. When the answer indicates delivery will be made on schedule, the metal tabs are moved to the date four days after the scheduled receipt date.

If the items have not been received by the time, another follow-up is made. If there is still no action, the analyst turns the order over to the buyer who gives it his personal attention.

Noted on the VISIrecord card are abbreviations for the methods of follow-up employed (L-Letter; WV-Telegram; T-Telephone; V-Visit) and the results.

After the item has been received, a Goods Received (GR) form is sent to the buyer from receiving. He notes the shipment's arrival on the record and stamps it "Closed Out."

The card is kept a maximum of



LEFT:
The follow-up cards for production items are kept in the active file until the order has been filled and the possibility of rejection is eliminated. Notations mark the type and extent of follow-up required.

BELOW:
For non-production items, the traveling requisition and the inventory record are filed together. The requisition has a color block in the upper right hand corner on one side of the card and a different color block on the reverse side. The color on the requisition shows through the hole in the inventory record (arrow), indicating whether or not material is currently on order.

15 days in case of rejections, then it's given to the vendor facility group. This group uses the card to judge the number of follow-ups needed and how well the vendor complied with the requested delivery date. It classifies the vendor as being either Satisfactory or Unsatisfactory (S or U) on vendor performance history (VPH) cards. After too many "U's" the vendor is removed from the approved list.

Shortage items requiring more stringent follow-up have red tabs at the tops of their cards. In case of rejections from receiving-inspection or change orders, the VISIcard is used to follow-up until final completion of the order.

Previously, our buyers had files of copies of purchase orders in manila folders. The folders were kept in drawer files, had dates stamped on them and a metal tab attached to the desired delivery day. Buyers had to walk to the files, dig out the folders they wanted, and return them to their desks. The tabs were often lost and it was impossible for the buyers to check all the folders each day. Some shortages were not spotted until too late. As a result we were forced to keep inventories amounting to several month's supply, compared with 1.4 months at present.

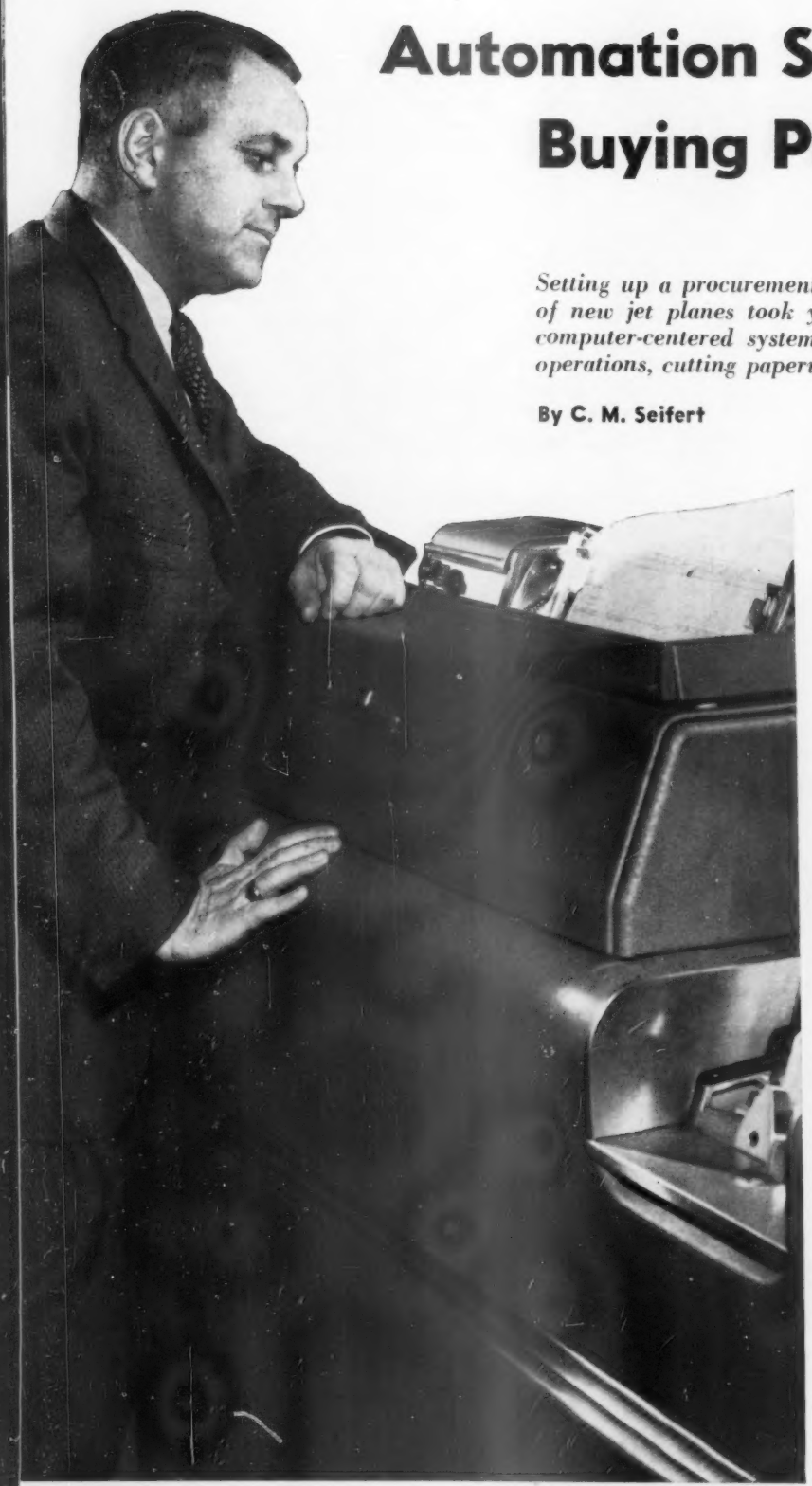
(2) Usage—Usage items are handled by one buying group.

(*Please turn to page* 182)

Automation Solves Buying Problem

Setting up a procurement program to supply a fleet of new jet planes took years of planning. But the computer-centered system has paid off by speeding operations, cutting paperwork.

By C. M. Seifert



PROVISIONING and supplying spare parts for a major commercial airline is always an involved operation. But it becomes extremely complex for a fleet of completely new aircraft.

The purchase of DC-8 jets and Vanguard turboprop planes by Trans-Canada Air Lines required long-range procurement decisions before the orders were placed. A special organization and procedures were established under the direction of Supply Manager Les McDowell, who is responsible for inventory control, purchasing, receiving, warehousing, and issuing of spare parts and provisions.

Cut Down on Record Keeping

The first move was to install an IBM 650 computer to aid in purchasing and inventory control of supplies. Procurement data on parts and supplies for the new planes was scarcer and less uniform than that for well-established aircraft. TCA management felt machine handling would help keep the necessary information within manageable proportions.

Initially, a separate group of three was formed under Purchasing Agent Richard Tritt, to procure provisioning data and pro-

TCA Purchasing Agent R. D. Tritt watches computer transcribing inventory and order data sheet.

gram it for IBM recording. Even though some suppliers are not equipped to handle such transactions, all parts and provisioning orders for the two new planes were programed on IBM. The program had to be started two years before actual delivery of the planes.

After evolving a broad general plan, Tritt proceeded to contact manufacturers and suppliers for necessary procurement data. This also meant advising on type of information needed. In some cases major suppliers were visited.

The task of correlating the mass of brochures, IBM cards, mimeographed sheets, catalogues, etc., into T.C.A.'s purchasing system, via the IBM, was an immense task. It necessitated close co-operation with the EDP section, to ensure procedures compatible to both suppliers' and T.C.A.'s requirements. As demand arose, the original group was enlarged by drawing seasoned personnel from other functions.

During this phase, a peculiar snag developed with some American suppliers who were unaware of the magnitude of the operation. Instead of supplying procurement data, they insisted items should be returned for repair—not realizing many factors, time especially, made their suggestion completely impractical.

Potential requirements in terms of expenditures, number of items in inventory, inventory levels, floats of rotables and repairable units, etc., were forecast by the group's inventory control section.

More Than 50,000 Changes

Office engineers were "requisitioned" by the group to insure materials handling and stores setup in the new building would be suitable for their requirements.

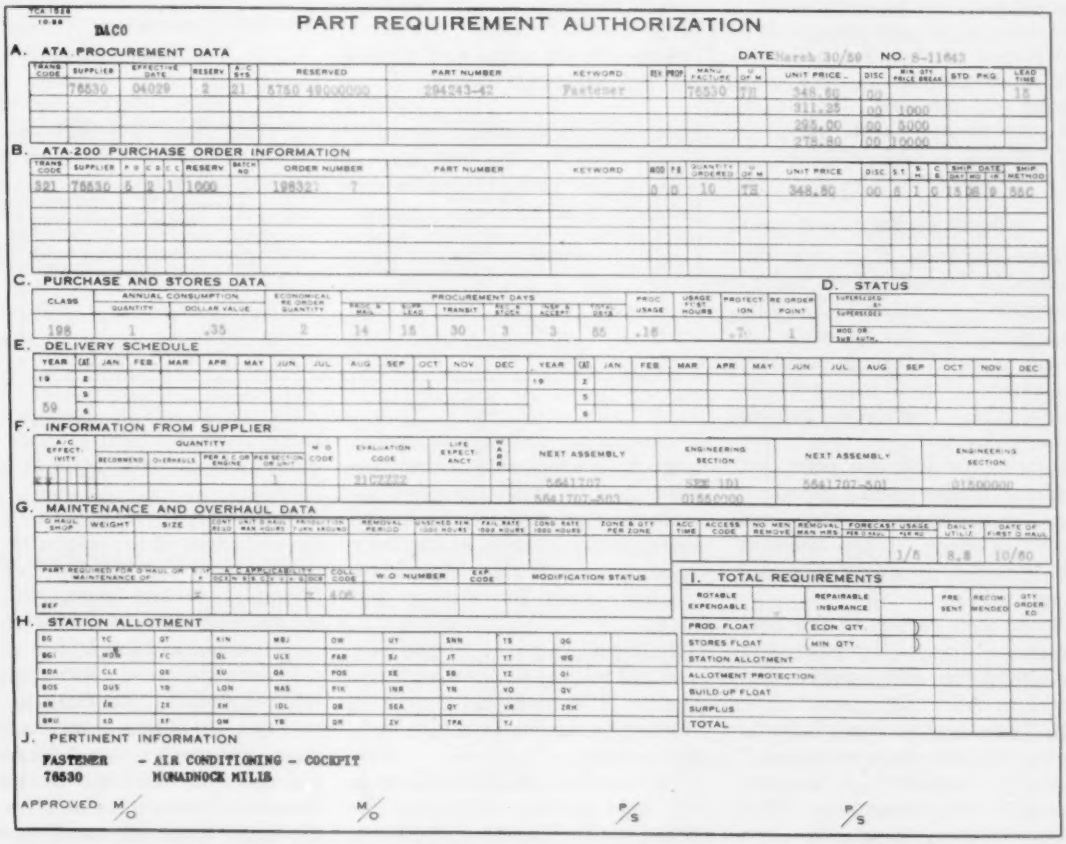
A PRA form was developed (see illustration), both to program from and to provide a visual record of what was programed. This record contains any subsequent changes. "And there were many," says Tritt. "On the DC-8 alone there have been more than 50,000 part number changes!"

They designed a small machine-produced purchase order form for a major supplier who was not equipped to handle ATA 200 specifications.

As purchasing under the ATA 200 specification system was put in practice, general terms agreements were worked out. These included contract terms clearly stated, present and future business forecasts made, penalty clauses (both for suppliers' tardy deliveries and T.C.A.'s insufficient lead time purchases.)

Simultaneously the group was involved in the sheer physical task of placing orders in time to allow for suppliers' lead time. "It was two years tremendous work," says McDowell. "We had to have parts on hand when the base opened and the aircraft arrived."

Since Canadian firms must pay duty and Federal sales tax on



PART REQUIREMENT AUTHORIZATION

DATE March 30/59 NO. S-11643

A. ATA PROCUREMENT DATA

TRANS CODE	SUPPLIER	EFFECTIVE DATE	RESERV	A-C SYS	RESERVED	PART NUMBER	KEYWORD	REV	PROP	MANUFACTURE	U OF M	UNIT PRICE	DISC	MIN QTY PRICE BREAK	STD PKG	LEAD TIME
	76530	04029	2	21	5750 49000000	294243-42	Fastener			76530	EA	348.80	00			15
												911.25	00	1000		
												295.00	00	5000		
												278.80	00	10000		

B. ATA 200 PURCHASE ORDER INFORMATION

TRANS CODE	SUPPLIER	P	Q	C	D	E	RESERV	BATCH NO	ORDER NUMBER	PART NUMBER	KEYWORD	MOD	P.B.	QUANTITY ORDERED	U OF M	UNIT PRICE	DISC	S.T.	S.M.	C.B.	SHIP DAYS	SHIP MOS.	SHIP DATE	SHIP METHOD
521	76530	5	2	1			1000		198321 7			0	0	10	EA	348.80	00	5	1	0	15	06	8	SSC

C. PURCHASE AND STORES DATA

CLASS	ANNUAL CONSUMPTION QUANTITY	ANNUAL CONSUMPTION DOLLAR VALUE	ECONOMICAL RE ORDER QUANTITY	PROCUREMENT DAYS REQ'S & PROC.	PROCUREMENT DAYS SHIP LEAD	PROCUREMENT DAYS TRANSIT	PROCUREMENT DAYS REC'S & STOCK	PROCUREMENT DAYS TOTAL DAYS	PROC USAGE	USAGE PER HOURS	PROTECTION	RE ORDER POINT
198	1	.35	2	14	15	30	3	65	.18		.7	1

D. STATUS

SUPERSEDED BY:

SUPERSEDES:

MOD. OR SUB. AUTH.

E. DELIVERY SCHEDULE

YEAR	CAT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	CAT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
19	4										1			19	7												
	5														8												
59	6														9												

F. INFORMATION FROM SUPPLIER

A-C EFFECTIVITY	QUANTITY RECOMMEND	QUANTITY OVERHAUL	QUANTITY PER A-C OR ENGINE	QUANTITY PER SECTION OR UNIT	W.O. CODE	EVALUATION CODE	LIFE EXPECTANCY	W.A.R.	NEXT ASSEMBLY	ENGINEERING SECTION	NEXT ASSEMBLY	ENGINEERING SECTION	NEXT ASSEMBLY	ENGINEERING SECTION
				1		21022222			5641707	SEE 101	5641707-501	01500000		
									5641707-503	01560000				

G. MAINTENANCE AND OVERHAUL DATA

O HAUL SHOP	WEIGHT	SIZE	CONT'D MAN HOURS	UNIT O HAUL MAN HOURS	PRODUCTION TURN AROUND	REMOVAL PERIOD	DISPATCHED R/M 1000 HOURS	FAIL RATE 1000 HOURS	COND RATE 1000 HOURS	ZONE & QTY PER ZONE	ACC TIME	ACCESS CODE	NO. MEN REMOVE	REMOVAL MAN HRS.	FORECAST USAGE PER A/C	PER ENG.	DAILY UTILIZ.	DATE OF FIRST O HAUL
																1/8	8.8	10/60

PART REQUIRED FOR O HAUL OR MAINTENANCE OF	A-C	ENGS	APPLICABILITY SHP	SUB	COLL CODE	W.O. NUMBER	EXP CODE	MODIFICATION STATUS
REF	X			X	406			

H. STATION ALLOTMENT

BG	YC	QT	KIN	MBJ	OW	UY	SNN	TS	QG
BGI	MON	YC	GL	ULK	FAR	SJ	JT	TT	WG
BOA	CLE	QX	XU	QA	POS	XE	SQ	YZ	QI
BOS	DUS	YB	LON	NAS	PIK	INR	YR	VO	QV
BR	EN	ZX	XH	IDL	QB	SEA	QY	VB	ZRH
BRU	KD	XF	QN	YR	QK	ZV	TPA	YJ	

I. TOTAL REQUIREMENTS

	ROTABLE EXPENDABLE		REPAIRABLE INSURANCE		PRE SENT	RECOM MENDED	QTY ORDERED
PROD. FLOAT		ECON. QTY		)			
STORES FLOAT		MIN. QTY		)			
STATION ALLOTMENT							
ALLOTMENT PROTECTION							
BUILD-UP FLOAT							
SURPLUS							
TOTAL							

J. PERTINENT INFORMATION

FASTENER - AIR CONDITIONING - COCKPIT
76530 MONADNOCK MILLS

APPROVED: M/O M/O P/S P/S

Part Requirement Authorization was developed during initial fleet provisioning. It carries basic data on parts and it forecasts anticipated failure rate, usage, lead times, etc.



Data on new items for TCA's fleet are prepared manually on New Item Order and Change Advice (top) then on punched order card (middle) for programing on computer. Three-part purchase order card (bottom) replaces 10-part purchase and receiving forms.

imported articles of a type obtainable in Canada, data had to be prepared to enable T.C.A. customs personnel to expedite incoming material through customs, i.e., material that was actually unobtainabe, therefore taxable but duty-free.

Because the 650 can print out purchase order and receiving cards, requisitions, locator and order file cards, it has speeded and tightened up many purchasing operations.

"When you return to the conventional 10-part purchase and receiving forms for suppliers not geared to ATA 200 specs," says Tritt, "you realize what benefits you derive from the new system." Presently about 40% of his purchasing is done through the ATA 200 specification system.

Basically the IBM stores such useful information on purchases as number, description, price, usage data, procurement time, reorder points, deviation factors, pertinent supplier information and various remarks such as currency variations, etc. It also prints identification cards for storage bin fronts.

McDowell, who is responsible for a $35 million dollar inventory, says the IBM promptly gives him information for his 18 month budget forecasts.

Stock valued at $30 million is now held in the 125,000 sq. ft. alloted to Purchases and Stores in the new base, occupied since May 1960. This includes everything from $250,000 aircraft engines right down to cases of baby food.

McDowell points out that with the assistance of the computer and its installed warning devices his inventory control group will be able to maintain inventory at the most economical level.

"While the new system is certainly beneficial," he sums up, "no machine is better than its program. Anyone who's gone through a similar installation will appreciate our headaches. Once we get the bugs out of the machine, material and humans . . . we'll be squared away!" ► END

Contracts: What Does "Or Equal" Mean?

Although the courts imply that nothing is equal to money except more money, their interpretation of "equal" equipment is not so strict.

By Albert Woodruff Gray,
Legal Editor

IT IS hazardous to try to define the words "or equal" and "equivalent" as they are used in contemporary purchasing contracts. The courts have not always agreed about their meaning.

For instance, when a lumber dealer agreed to furnish a mill operator with a suitable place in North Carolina for the construction of a mill and then deliver 10,000 feet of logs per day, the contract stated that the operator would pay $5 per 1000 feet "in cash or its equivalent." Yet, when the sawmill operator was unable to meet payments and offered in lieu of the cash, drafts accepted by its customers, the dealer refused and sued for the unpaid balance.

The defense relied on the contract provision that payment be made "in cash or its equivalent."

Paper Isn't Cash

But the trial court instructed the jury that there was nothing in the original contract that required the lumber dealer to accept paper as the equivalent of money. The court further maintained that even if the lumber dealer had accepted paper at various times during the contract, he was not compelled to do so under the original contract.

The mill owner objected that such a method of payment was within the meaning of the phrase "in cash or its equivalent." An appellate court, however, sustained the decision that the offer of drafts was not within the meaning of "equivalent" as used in the contract.

The appellate court said: "To be paid in cash or its equivalent without further explanation would mean nothing besides money that the lumber dealers might agree to take, as they agreed to take and did take a note and mortgage or drafts on these customers. But there is nothing in the written contract fixing this, if anything, as the equivalent of cash."

A Texas court handed down a similar interpretation but a few years before. An assignment for the benefit of creditors stipulated that the assignee "shall thereafter with all reasonable dispatch proceed to sell and dispose of the said goods, wares and merchandise and furniture and collect such book accounts and bills receivable and convert the same into cash or its equivalent."

The court refused to accept the argument that the clause "or its equivalent" authorized the sale of the assigned property on credit. The clause, it said, "cannot be construed to empower the assignee to sell for anything but money. The meaning of the provision is not clear. It is not easy to conceive what is intended to be embraced by the use of the words 'its equivalent' but to be equivalent to cash it must be something as good as cash or, as we take it, something that could readily be converted into cash at a fixed price."

Later Decisions on Money

A comment made by the U. S. Supreme Court over a century ago may well have laid the foundation for the later decisions that "or equivalent," in reference to money, is synonymous with equal value.

A contract to transport merchandise by boat from Cincinnati to St. Louis had stipulated that payment be made "in specie funds or their equivalent." Endorsed on the agreement was the memorandum: "It is understood that the payment to be made in Cincinnati is to be in the paper of the Miami Exporting Company or its equivalent."

"The notes of the Miami Exporting Company," said the Supreme Court, "were substituted by the parties as the standard of value and the payment by those notes or by others of equal value was all the carrier had the right

"The purpose of the clause 'or equal' or 'equivalent' in a specification is that it should not absolutely bar competitive equipment, or bar from competition certain products the specification writer may know nothing about."

to demand."

When, however, this "or equal" phrase is applied, not to the financial features of contracts but to the description of mechanical equipment or devices, it has a definition that is apparently derived from the patent law.

The City Sues

As an example, a contract for the construction of a water supply and distributing system for a city in California provided that pumps to be installed should be "The Kimball type, augur pump or equivalent." The residents of the city sued to prevent the performance of the contract on the ground, among others, that the plans and specifications failed to set out a full and detailed description of the equipment to be used.

Commenting on this feature of the plans that provided for a specified type of pump "or equivalent" the court said: "The word "equivalent" in mechanical matters has a distinct meaning in the trade which is a combination of the ordinary use of the word and the meaning of the word as used in the patent law, and indicates a device of practical equivalence in value and effect and of substantially the same design, performing the same functions in practically the same manner."

Concerning the use of the phrase in the contract, the court continued: "If the plans, specifications and resolution of intention are sufficient with respect to this particular pump to indicate the adoption of a certain Kimball type augur pump as manufactured by the Frank J. Kimball Co., or equivalent, it is not then necessary to show cross sections and specifications of foundry make, manufacturer's details and patterns because a particular thing has been identified and is a standard article that can be supplied in the general market."

The phrase "or equal" appeared in a contract for the installation of a ventilating system in a municipal auditorium in New Orleans. The architect's specifications stated: "In each of the five rooms it is required at times to use all fresh air, or recirculating air or a mixture. This contractor is to furnish and install proper Johnson Service Company or equal hand control dampers of a type that can be locked in any position they are set so that the right mixture of air can be obtained."

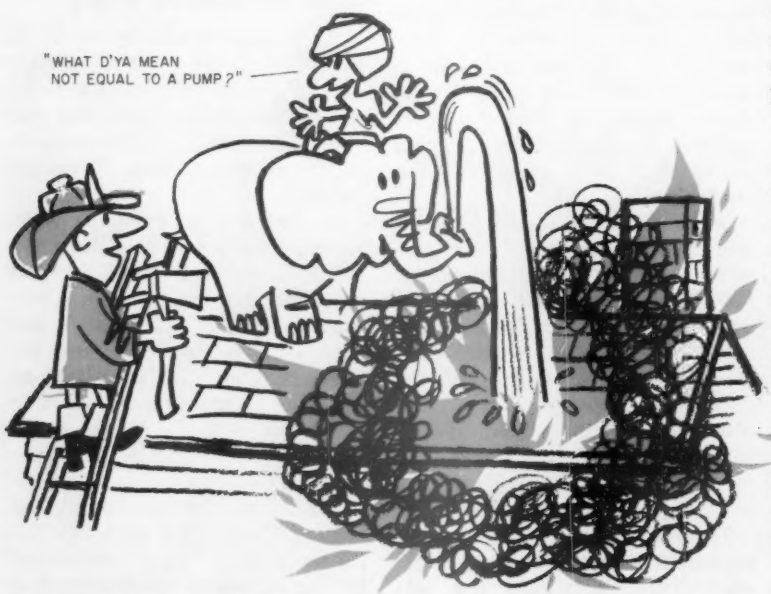
How the Court Ruled

The heating and ventilating contractor installed dampers in the building which he insisted were the "equal" of the Johnson Service Dampers named in the contract. As a consequence of the controversy over this substitution the general contractor authorized the Johnson Service Company to make the installation and deducted this expense from the amount payable to the ventilating contractor.

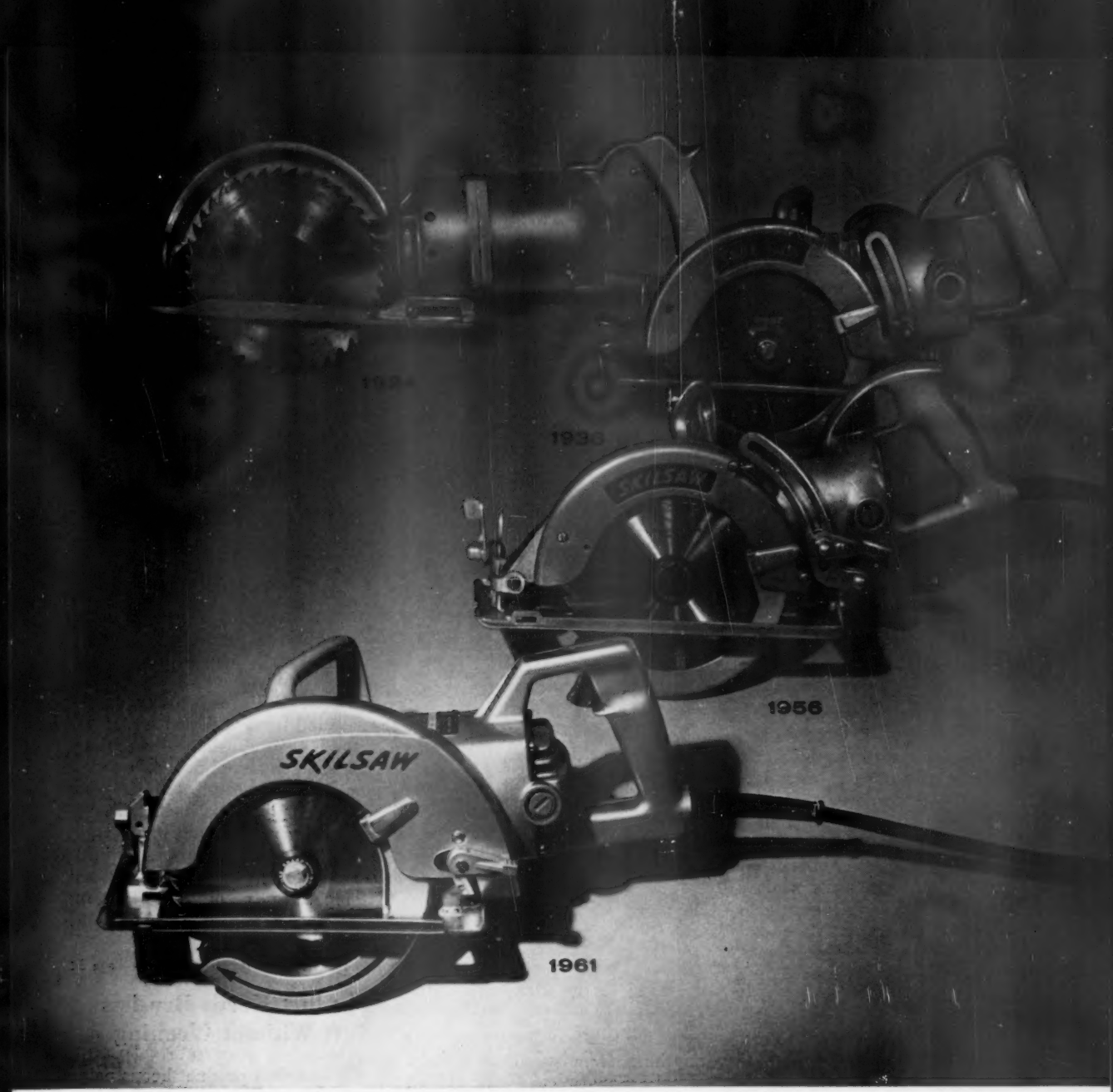
Action by the ventilating contractor brought the case to trial. The Louisiana court adopted an architect's interpretation of the phrase "or equal." "The only purpose of such a clause in the architect's specifications is that it should not absolutely bar competitive equipment or bar from competition certain products he may know nothing about.

"For instance, he will specify two particular makes 'or equal' because there are probably twenty or thirty others which may be submitted which he would be willing to approve and naturally an architect is the only one who could approve those 'or equal' substitutions."

(*Please turn to page* 178)



"The word 'equivalent' indicates a device of practical equivalence in value and effect and of substantially the same design, performing the same function in practically the same manner."



Now! Best Skilsaw models in 36 years!

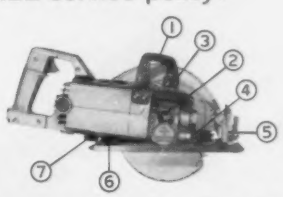
with new "Burnout Protection" motors, backed by full year FREE service policy!

Take it from us—you simply can't afford *not* to use these newest versions of world famous Skil worm-drive saws, they're that much better!

12 major improvements. To start with, we took the finest Skil power saws ever made (the 6½" Model 367, 7¼" Model 77 and 8¼" Model 825) and gave them new B-P motors that give "Burnout Protection" even during frequent, excessive overloads. Next, we made oil level control and oil pressure relief automatic. Then we added a new airflow hood for better cooling, and the convenience of an easier-to-read bevel gauge and a telescoping blade guard that can't bind even on trickiest miter cuts.

The list of improvements goes on and on to make these, unquestionably, the finest saws ever to carry the name "Skilsaw" . . . and that's saying a lot!

Ask your Skil distributor for more information, today. Look under "Tools-Electric" in the Yellow Pages. Or write: Skil Corporation, Dept. 125D, 5033 Elston Avenue, Chicago 30, Illinois.

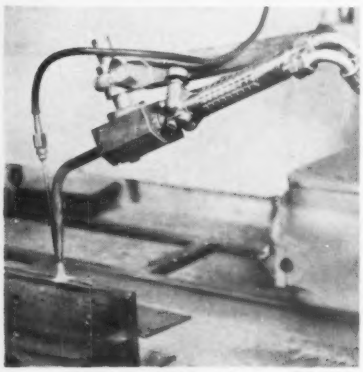


(1) New plastic-covered top handle for cooler handling. (2) Automatic oil level control. (3) New air flow hood. (4) Push-button blade lock. (5) Easy-to-read bevel gauge. (6) Stronger steel foot. (7) New sawdust ejector system.

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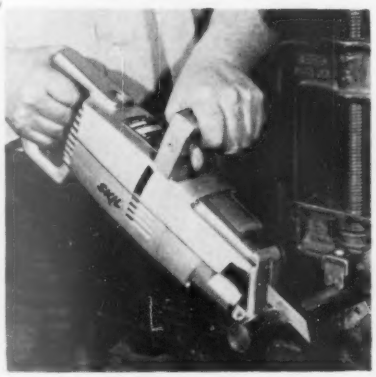
Portable Conveyor Has Simple Height Adjuster



A portable booster belt conveyor incorporates a lower-cost, trouble-free mechanism which is spring counter-balanced to provide quick, safe height adjustment. Conveyor weighs only 375 lbs. and has large 8 in. dia. ball bearing rubber-tired front wheels. Unit is 11 ft. 6 in. long and 17½ in. wide. It can be adjusted to elevate loads to a maximum of 6 ft. 6 in. and will lower to operate at elevation of 20 in. Live load capacity at maximum elevation is 175 lbs., while unit will deliver live load of 300 lbs. at minimum elevation. Driven by 1/3 hp, 36 rpm, right angle gearmotor, belt carries loads at speed of 50 ft per min. **Mathews Conveyor Co., 901 County Rd., San Carlos, Calif.**

Write No. 19 on Information Card—Page 32

Two Reciprocating Saws Will Cut Anything



Two two-speed saws will cut anything from wood to hardest metals. Saw which will cut all metals, including stainless steel, features speeds of 1000 and 1400 strokes per minute. Low speed is for stainless steel, other hard alloys, cast iron and any hard abrasive material. Saw makes clean, burr-free cut on 1 in. steel bar stock in 23 seconds. High speed is for mild steel and non-ferrous metals. Second unit is improved model of reciprocating saw featuring speeds of 3500 spm, for wood, composition and plastic, and 2600 spm for many metal cutting jobs. Blade stroke is 13/16 in. for better chip clearance. Blades mount off-center on both saws for cutting close to walls and corners. **Skil Corp., 5033 Elston Ave., Chicago 30, Ill.**

Write No. 20 on Information Card—Page 32

Tough Sandwich Panels Insulate, Resist Moisture



Stressed skin sandwich panels, constructed with rigid polystyrene cores, can be had in any size and thickness up to 8 ft by 20 ft by 10 in. Panel cores are insulating, moisture resistant, dimensionally stable and will not attract termites or rodents. Panel surfaces may be selected from wide variety of finished or unfinished sheet materials, such as plywood, gypsum board, masonite, aluminum or steel. Applications include refrigeration trucks, industrial coolers, interior partitions, containers, warehouse walls, roofs, controlled temperature rooms, etc. **Clark Industries, 375 E. Fifth Ave., Columbus 1, Ohio.**

Write No. 21 on Information Card—Page 32

Product Keeps Brushes Soft Without Cleaning

An aerosol product keeps paint brushes soft without cleaning. Non-flammable and non-toxic material also softens hard brushes, permits cleaning paint off face and hands without irritation, and aids thorough cleaning of any paint brush in soap or detergent and water. With thorough spraying, brushes can be stored for months without cleaning. Material may be used for paint, varnish, lacquers, enamels, floor sealers and primers and other synthetics. It is a plasticizer and is compatible with all finishes except water emulsion types, which require preliminary washing of brush with water. **Crown Industrial Products Co., 931 Amsterdam St., Woodstock, Ill.**

Write No. 22 on Information Card—Page 32



Ferret out the *hidden* costs of corrosion

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If you would like to see better how our Plant Equipment people and those in the four other departments of our Technical Products Division can help you solve problems with glass, send for our Industrial Glass Bulletin, IZ-1. Address: 9704 Crystal Street, Corning, New York.

CORNING TECHNICAL PRODUCTS
A DIVISION OF CORNING GLASS WORKS
industrial components • plant equipment • glass for optics, lighting, laboratories

For More Facts Write No. 200 on Information Card—Page 32

For More Facts About Ad on Following Page Write in No. 201→





NEW

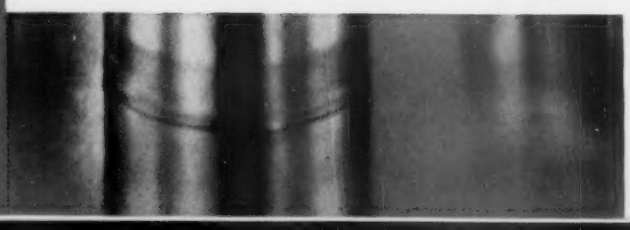
Major mill additions make Youngstown an even better source for higher quality tin plate

New additions to Youngstown's No. 2 Tin Mill at Indiana Harbor include:

- The largest, most modern annealing facilities built to date. Youngstown's new No. 2 Continuous Annealing Line, shown here, has maximum speed of 2000 FPM, producing 60 gleaming tons per hour.
- A new six-stand tandem cold reduction mill —the first, largest and fastest in the world, capable of rolling 7250 FPM of light weight tin plate, in gauges down to .0035. This fantastic speed is nearly 50% faster than that of any mill today.

These major additions to our facilities mean you get more and better tin plate from Youngstown. You get the exact temper and gauge you want . . . fast! And you get the uniform high quality that only an integrated steel-making operation can deliver. For your needs, specify quality tin plate from Youngstown's new facilities.

Youngstown – growing force in steel



For full details on Youngstown tin plate, write to: Department 17-B
The Youngstown Sheet and Tube Company, Youngstown, Ohio



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A SUBSIDIARY OF:
GRAPHIC CONTROLS CORPORATION
Buffalo 10, New York
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Products

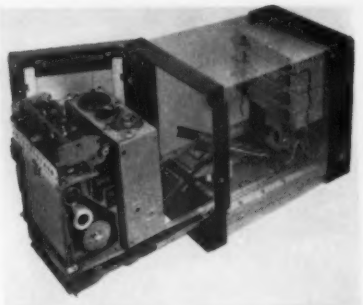
Balance Provides Rapid, Precise Weighing



A precision balance is designed for rapid precise weighings in the fields of research, production, quality control, and analytical work. Balance is of double hook design and fills weighing needs in range as low as 0-3 mg or as high as 0-50 grams. By means of its counterweighing ability, loads up to three times scale value can also be weighed. Chief advantages are simplicity and speed of operation. Accuracy is insured within plus or minus 1/10 of 1% by use of sapphire ring jewels that support the element on precision-ground knife edges. Balance weighs only 10 lbs and is 13 x 6 x 10 in. **Federal Pacific Electric Co., 50 Avenue L, Newark 1, N. J.**

Write No. 23 on Information Card—Page 32

Strain Gage Replaces Potentiometer Slidewire



An industrial process potentiometer incorporates an extremely accurate, trouble-free electro-

(*Please turn to page 100*)



PLASTIC PROBLEMS?

LET THE ENGINEERING EXPERIENCE OF THE OLDEST EXCLUSIVE EXTRUDER OF THERMOPLASTIC SHEET HELP YOU...

By consulting the experts at Midwest Plastic Products, you enjoy the benefit of more than a quarter century of experience with hundreds of end-products. Look first to Midwest for *practical* suggestions to insure products with every desired quality. Easily formed, dimensionally stable MIDLON materials are available in choice of color, and custom-cut to your specifications. High impact polystyrene, cellulose acetate, cellulose acetate butyrate, polyethylene and acrylic for your needs. Prompt delivery assured from our central location.

Midwest Plastic products company

Write Dept. P-4 For Free Price Calculator and Catalog!

1801 CHICAGO ROAD
CHICAGO HEIGHTS, ILLINOIS

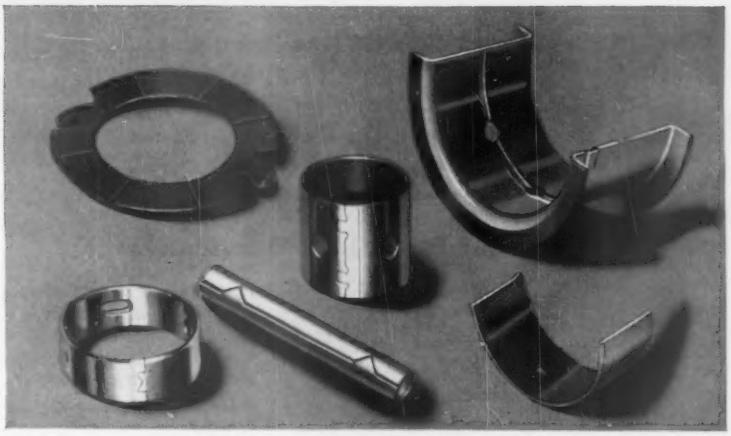
For More Information Write No. 203 on Information Card—Page 32

75-MILLIONTHS OF AN INCH BARRIER HALTS METAL MIGRATION



JUST BENEATH THE FRESH OVERPLATE OF THESE F-M ENGINE BEARINGS (LEFT) LIES A TENUOUS DIFFUSION BARRIER. Though this film of metal is only 75-millionths of an inch thin, it stops tin in the overplate from migrating into the lining metal beneath. Its presence is important to bearing overplate performance, particularly during the critical period of engine break-in. Maintaining uniform thinness as well as uniform composition of the plated barrier is most important . . . and most difficult to achieve on a production scale. Federal-Mogul research has developed a unique, extraordinarily precise method for controlling both the thinness and the metallic composition of this barrier, within narrow limits. And the performance of F-M engine sleeve bearings attests to the success of the method!

RESEARCH INTO ELECTROPLATING problems is a continuing project in the F-M laboratories. Unusual precision equipment and facilities are employed, many of which have been specially designed and engineered by F-M to solve problems of sliding-bearing application. As a result, Federal-Mogul engineered sleeve bearings, precision thrust washers, formed bushings, and low-cost spacers provide the finest possible performance characteristics for any application.



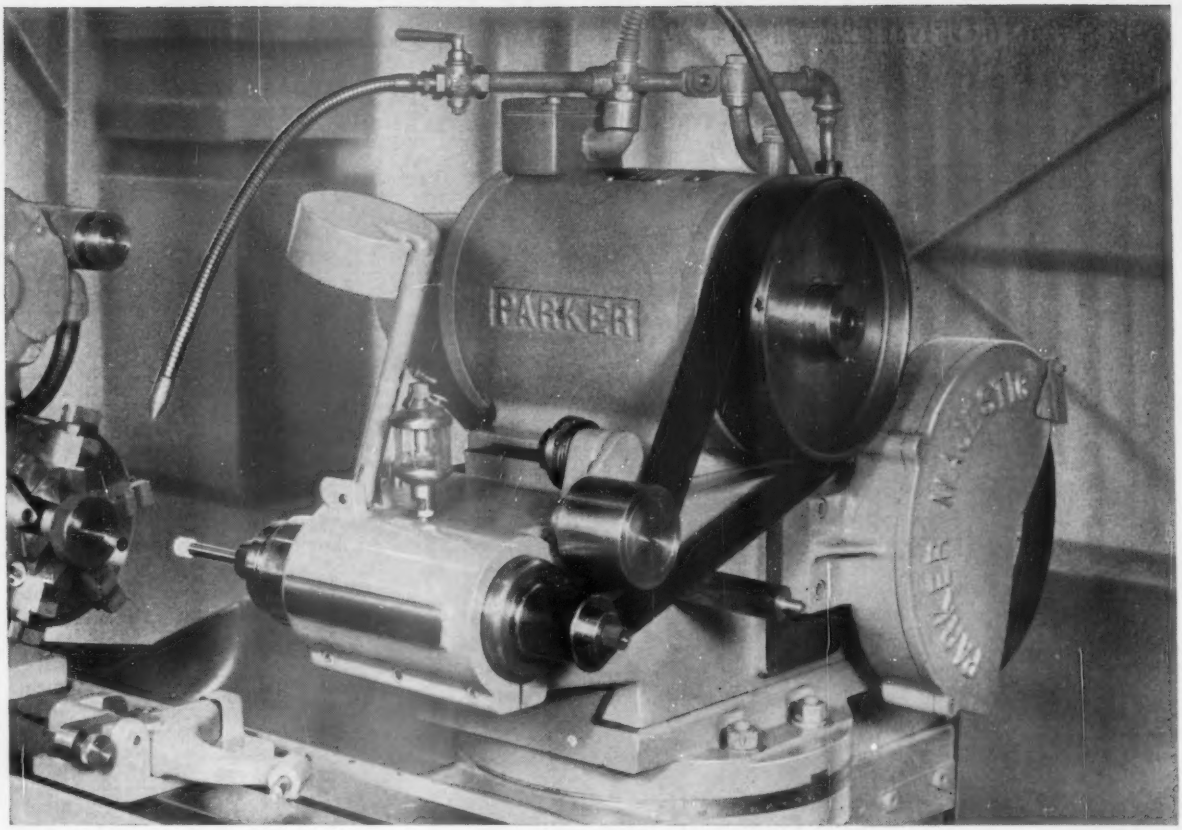
Have you a problem with bearings, bushings or washers? Are you considering the development or redesign of an item of the type shown above? We'll be glad to show you how the job can be done most effectively and economically. For information, write Federal-Mogul Division, Federal-Mogul-Bower Bearings, Inc., 11077 Shoemaker, Detroit 13, Michigan.

FEDERAL-MOGUL

sleeve bearings
bushings-spacers
thrust washers

DIVISION OF
FEDERAL-MOGUL-BOWER
BEARINGS, INC.

For More Facts Write No. 204 on Information Card—Page 32



Now, your local Gates Distributor stocks belts for all your high speed machines

...immediate delivery through Gates new Custom-Stock Service

Gates new Custom-Stock Service saves you money two important ways.

1. It assures you of fast delivery of every size of replacement belt you need for your high speed machines—avoiding delivery delays that are costly in lost production from idle equipment.

2. It gives you the money-saving benefits of using Gates Speed-Flex Belts—the belt made to outwear any other high speed belt.

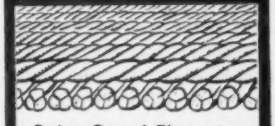
How Gates Custom-Stock Service works:

- Your local Gates Distributor will call at your plant and quickly determine the belt size for each of your high speed machines.
- He will maintain a stock of every one of the belt sizes that you need.
- You keep only a few spares on hand for immediate replacement—and call him for fast delivery when you need additional belts.
- Your production output benefits from the smooth-running efficiency and extra long service life provided by Gates Speed-Flex Belts.

For all the details on this money-saving CUSTOM-STOCK service, contact your nearby Gates Distributor.



In ordinary woven and braided belts, a cutting action between cords can greatly reduce belt life.



Gates Speed-Flex construction has no wear of cord against cord—belts last up to 5 times longer.

The Gates Rubber Company, Denver, Colorado BP35

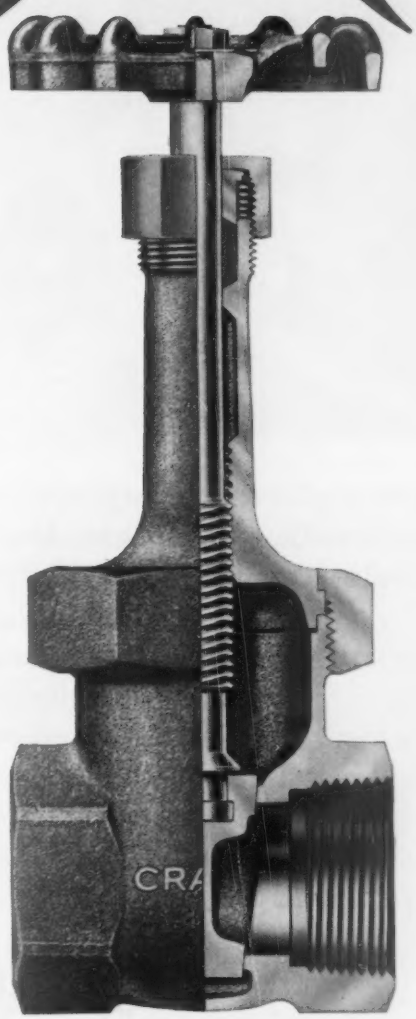
Gates® *Building the future on 50 years of progress*

Gates Speed-Flex Belts

For More Facts Write No. 205 on Information Card—Page 32

ANOTHER
ACHIEVEMENT
IN MODERN
FLOW CONTROL
BY CRANE

NO WASP WAIST ON THIS VALVE



CRANE 125-AND 150-POUND UNION BONNET BRONZE GATE VALVES

STRONGER CYLINDRICAL BODY DESIGN FOR LONG SERVICE LIFE

Every part of these new valves has been carefully engineered and liberally proportioned to assure an extra safety factor over the recommended working pressures. Unlike ordinary pinched-in, rectangular body valves, Crane's cylindrical body—the same design used in Crane's heavy-duty 200- and 300-pound bronze gate valves—distributes pressure loads uniformly and reinforces seat against the wedging action of the disc.

Wider, huskier hex ends combined with the new body shape give this valve greater rigidity, reduce chance of leakage and early failure resulting from piping strains. They make for easy installation, too.

Many other Crane features—the deep stuffing box that can be repacked under pressure, substantial thread engagement between stem and bonnet, and a precisely fitted bonnet joint—make this valve a best buy for safe, dependable, long service on steam, oil, gas and water lines.

Crane's 125- and 150-pound Union Bonnet Bronze Gate Valves are made in ¼-inch to 2-inch sizes with either a solid or split wedge disc. Both disc types are carefully machined and fully guided for positive, easy operation.

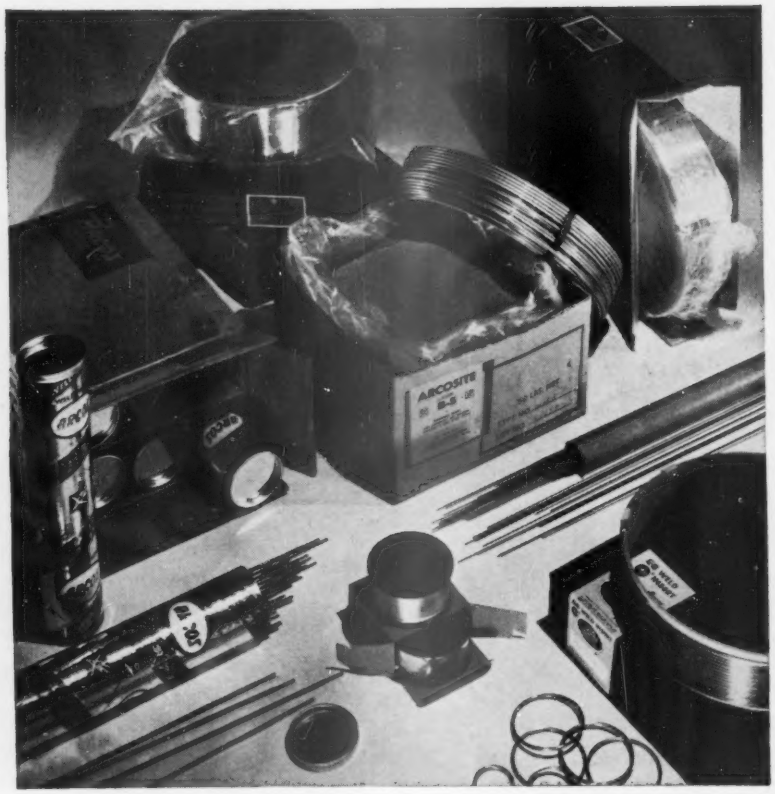
Your Crane Distributor has these new valves in stock. Contact him for information or write Crane Co., Industrial Products Group, 4100 S. Kedzie Avenue, Chicago 32, Ill. In Canada, Crane, Ltd., 1170 Beaver Hall Square, Montreal.

CRANE

VALVES • PIPING • ELECTRONIC CONTROLS
PLUMBING • HEATING • AIR CONDITIONING

For More Facts Write No. 206 on Information Card—Page 32

WELD WITH ARCOS FOR QUALITY WELD METAL



Arcos offers a complete line of filler metals for welding stainless, low alloy steels, mild steels, aluminum, and for hard surfacing . . . manually or automatically. Arcos covered electrodes, electrode wires, and filler rods are available for manual arc, submerged arc, inert gas, CO_2 shielded, and electroslag processes. The quality of all Arcos filler metal products, including fluxes for submerged arc welding and EB Inserts for root pass welding, is carefully controlled. *Make* sure it's Arcos . . . *be* sure of top performance.

ARCOS

Arcos Corporation • 1500 S. 50th St. • Philadelphia 43, Pa.

For More Facts Write No. 207 on Information Card—Page 32

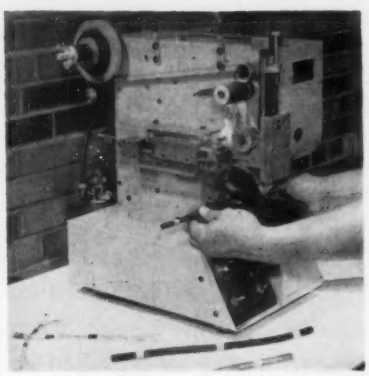
Products

(*Continued from page 96*)

mechanical strain gage as the rebalancing element. In eliminating the conventional slide-wire, infinite resolution is achieved. Initial models, which can be mounted in a standard 19 in. relay rack, on a panel or bench, or made portable, consist of a single pen strip and circular chart recorders and circular scale indicator, each with or without control. Stray signal rejection and single reference junction compensation for all types of thermocouples are among other unique features. Modular construction provides flexibility and versatility. **Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Wayne and Windrim Aves., Philadelphia 44, Pa.**

Write No. 24 on Information Card—Page 32

Harness Taping Machine Is Semi-Automatic



A semi-automatic machine tapes bundles of wires to form a taped harness. Unit applies pressure-sensitive tape to either single wires or to bundles by revolving the tape around bundle or wire. It is not necessary for assembly to turn in machine when applying tape. Semi-automatic operation makes possible a production rate of up to 20 applications a minute on simple operations. Capacity of standard model is ⅛ to ½ in. diameter wires or bundles, with larger machines on special order. Tape from ⅜ to 1 in. in width can be dispensed in lengths of ½ to 3¾ in. **Possis Machine Corp., 825 Rhode Island Ave. So., Mirneapolis 26, Minn.**

Write No. 25 on Information Card—Page 32

12 NEW GRINDERS in a power range all their own!



Now! You can choose the abrasive tools that best fit your needs from 138 sizes and types of Ingersoll-Rand Grinders.

features

- **Sensitive Weight-Type Governor**—prevents overspeeding, assures positive, accurate speed control.
- **Improved Muffling**—15 decibels quieter than comparable tools.
- **Built-In Lubricator**—automatic motor lubrication increases tool life.
- **Built-In Air Strainer**—protects motor.
- **Rubber-Faced Throttle Valve**—unaffected by moisture, dirt and rust.

New Series 15 Grinders

- **Speed—6000, 9000, 12000 and 15000 rpm**
- **Weight—6½ lbs.**
- **Length—16⅝ ins.**
- **Grip or straight handles with lever or thumb throttles**

Twelve new Ingersoll-Rand grinders in a completely new size and power range! These small, high-performance grinders are specifically designed to fill the need for light weight, easy-handling tools that will hold their speed under load on a wide variety of difficult grinding and buffing jobs.

Series 15 Grinders fill the bill—and offer manufacturers important new proof of tools to increase Annual Dividends on Payroll Dollars.*

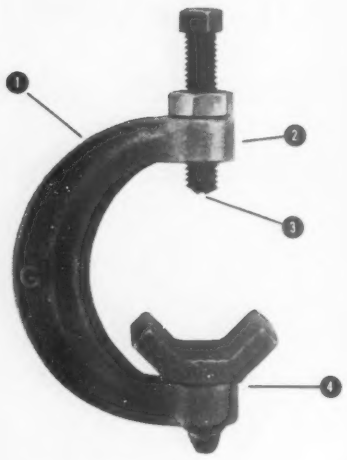
215A-8

*Ask your AIRengineer for a convincing on-the-spot demonstration of how these new grinders—as well as all other Ingersoll-Rand air tools—can earn an Annual Dividend on your Payroll Dollars.

Ingersoll-Rand
11 Broadway, New York 4, N. Y.
Planned Annual Retooling increases output per man

For More Facts Write No. 208 on Information Card—Page 32

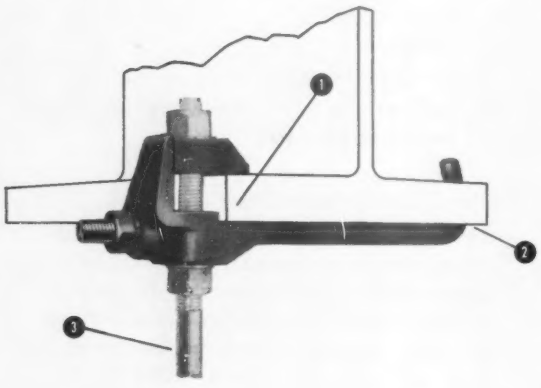
You get extra features...at no extra cost ...when you specify Grinnell Beam Clamps!



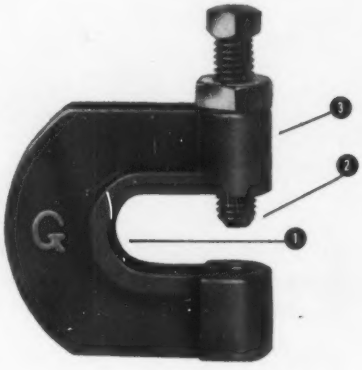
GRINNELL G-CLAMP HANGER, FIG. 92 — 1. Ribbed, malleable iron casting for greater strength, impact resistance. 2. Full thread engagement. 3. Hardened steel cup-point set screw for good "grip" on beam. 4. Saddle swivels 360°.



GRINNELL MALLEABLE BEAM CLAMP WITH EXTENSION PIECE, FIG. 229 — 1. Tie rod locks clamp in place when nuts are tightened. 2. One jaw size fits all beam flanges up to 7". 3. Malleable iron extension piece.



GRINNELL SIMPLEX SIDE I-BEAM CLAMP, FIG. 265 —1. 1¾" maximum jaw opening will take large beam flange thickness. 2. May be attached to beam of any flange width by merely ordering hook rod of suitable length. 3. Load ratings of 1,740 lbs.



GRINNELL G-CLAMP HANGER, FIG. 86 — 1. Ribbed, malleable iron casting for extra strength. 2. Hardened steel cup-point set screw for good "grip" on beam. 3. Full thread engagement — casting drilled and tapped for rod, set screw.

You get *more* Clamp for your money from Grinnell! Reason: Grinnell's huge volume reduces production costs . . . lowers prices right into line with competitive hangers that offer you much less.

Know what else you get with Grinnell Clamps? Wider choice of types and sizes! Better quality control! Published rating for *all* Clamps with a safety factor of at least 5 to 1! Faster delivery may be had from nationwide warehouses!

What's more, you always get dependable field service by trained Grinnell personnel . . . no matter how far from the job site the sale was made! Grinnell Company, Providence 1, Rhode Island.

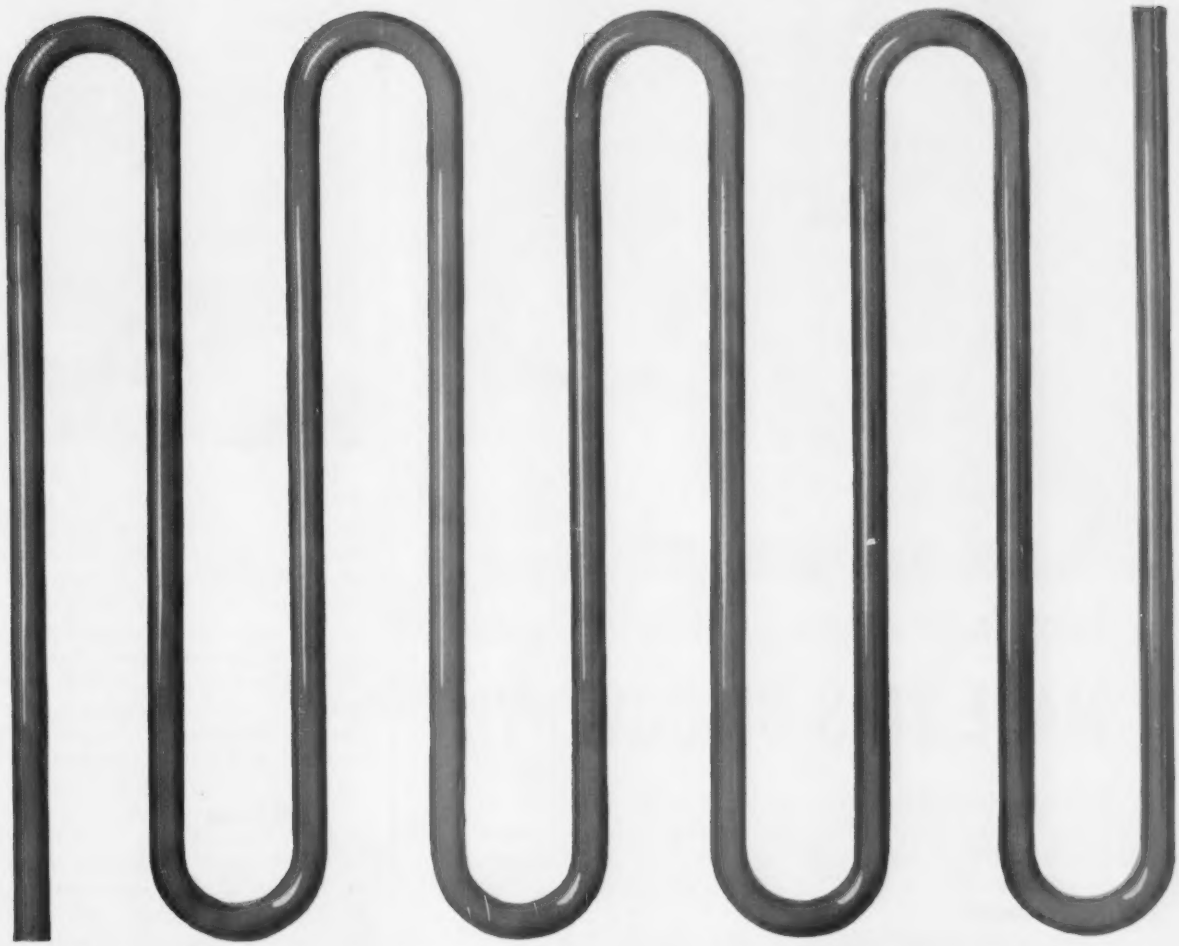
Remember, The Best Costs No More — from America's #1 Supplier of Pipe Hangers and Supports

Call your local Grinnell Distributor for pipe hangers, cast and malleable iron fittings, steel nipples, welding fittings, Grinnell-Saunders Valves, unit heaters — all made by

GRINNELL

For More Facts Write No. 209 on Information Card—Page 32

TURN TO ROCHESTER STEEL TUBING . . .



your #1 pipeline to FORMING FACILITIES

Lower cost without lower quality — that's what Rochester Steel Tubing's serpentine forming facilities offer refrigeration people. The secret is in our extensive and unique multiple forming facilities, coupled with tubing know-how. Result: lower cost, meaning real savings to you. Add to this Rochester Steel Tubing's rotary-straightening facilities and you get flat-as-a-pancake serpentines held to close dimensional tolerances. This speeds up wire welding for higher production and more savings. Such facilities and such care help give meaning to Rochester Reliability: to provide you with refrigeration tubing that works the way you want it to work for as long as you specify. More details? Write or wire Rochester Tubing Sales Manager.

GM

Rochester Reflects Reliability

GENERAL MOTORS

STEEL TUBING BY ROCHESTER PRODUCTS

ROCHESTER PRODUCTS DIVISION OF GENERAL MOTORS. ROCHESTER. NEW YORK

For More Facts Write No. 210 on Information Card—Page 32



There's a BIG difference in floor absorbents

MAKE THIS DISCOVERY!

RIGHT IN YOUR OWN OFFICE you can test the difference of Eagle-Picher Industrial Floor-Dry with whatever oil absorbent you're now using. You'll discover it actually absorbs as much as 100% or more liquid per pound than other floor drying materials.

YOU'LL ALSO PROVE that Eagle-Picher Floor-Dry retains its skid-proof granular mineral form even when saturated. It doesn't mud or pack. Light in weight, it spreads easier and covers a larger area. Non-combustible, it has no chemical reaction. And possessing unusual reflective power, Floor-Dry makes working conditions bright and pleasant, as well as safe!

Since 1843 EAGLE EP PICHER



WRITE TODAY. Our Eagle-Picher representative will bring the portable laboratory to your office where you may make this test yourself. The Eagle-Picher Company, Dept. P-410, Cincinnati 1, Ohio.

For More Facts Write No. 211 on Information Card—Page 32

Products

Thermoelectric Power Generators Available



Four units—5, 10, 50 and 100 watts—in a broad line of thermoelectric generators for commercial and industrial use are now available. Generators are completely static and ideally suited for applications in remote locations, such as cathode protection of pipelines, valve control, and powering microwave relay equipment. Units can be designed to combine any type of fuel and any type of cooling medium. Typical 100 watt thermoelectric generator weighs about 75 lbs. Output of basic generator is 11 volts at 10 amps d-c. Static converter operating at about 88% efficiency changes the output to 48 volts at 2.1 amps d-c. **Westinghouse Electric Corp., Box 2278, Pittsburgh 30, Pa.**

Write No. 26 on Information Card—Page 32

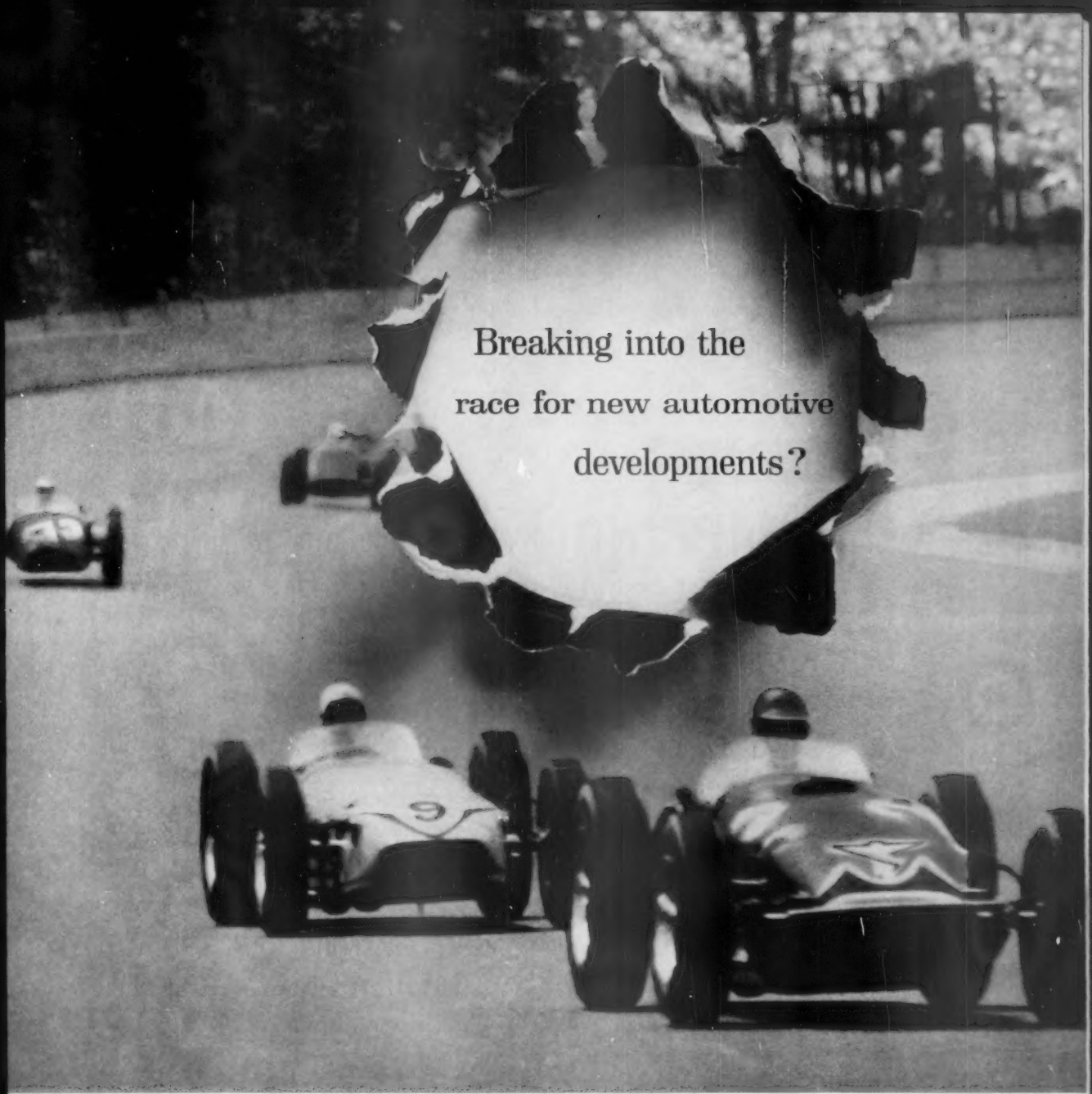
Silicone Encapsulant Is Flexible, Transparent



A recently developed silicone encapsulating material is flexible and transparent, permitting visual

(*Please turn to page* 108)

For More Facts About Ad on Facing Page Write in No. 212→



Dow laboratories breed new chemical products to order

Looking for a competitive improvement in your product? Call on Dow. Here, you will find research facilities geared to the development needs of nearly every industry. For example:

Pacing auto advancements. Soon the car you drive may have no water pump or thermostat. It will be cooled by boiling! In operation at Dow's Automotive Chemicals Laboratory is a prototype of such an "ebullient" cooling system. And developmental work is progressing toward a central hydraulic system to operate power steering and brakes, open windows, position seats, raise convertible tops. As tomorrow's cars call for new chemicals, Dow works with auto makers to develop them.

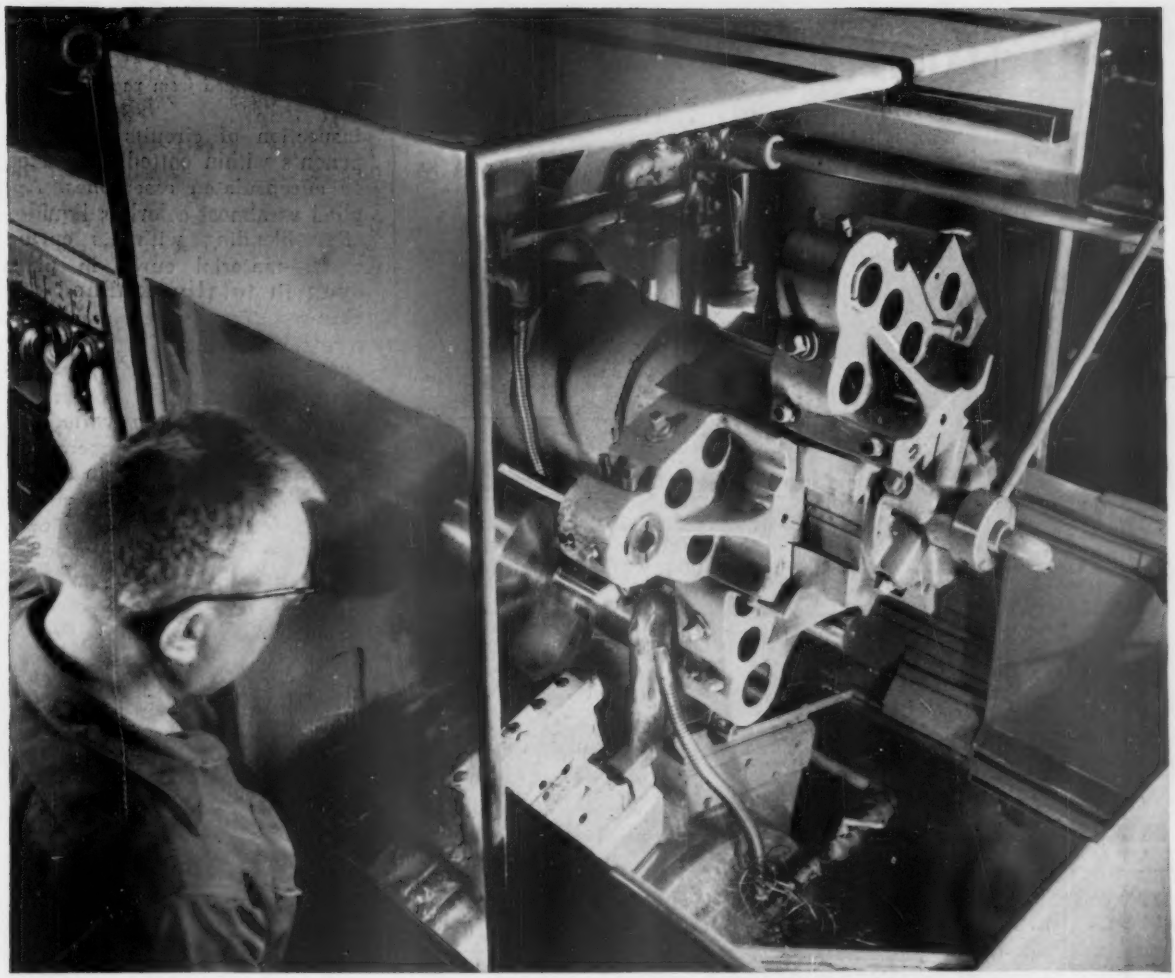
A fresh approach. A manufacturer was about to market a dishwasher with an automatic detergent dispenser. Liquid detergent formulations based on standard phosphate compounds failed to perform satisfactorily. Dow developed a detergent system based on special Dow wetting and water-softening agents. This simultaneously solved formulating problems and increased washing efficiency. A typical example of the Dow approach: When past procedures fail, create a new product to order.

Interested in new developments in automotive chemistry? In Dow's latest formulations? In the solution to some other chemical problems? Write us in Midland. We'd like to help you.

THE DOW CHEMICAL COMPANY DOW Midland, Michigan



For More Facts Write No. 213 on Information Card—Page 32



Rigidity and accuracy built into this Warner & Swasey 2AC chucking automatic permit heavy metal removal while holding close tolerances. Twenty-one parts made from AISI 4340 and 4615/20 steels contribute resistance to stress and wear in critical areas.

Warner & Swasey uses two nickel alloy steels to give the 2AC built-in rigidity and accuracy

Variety of parts made from 4340 and 4615/20 for long-term resistance to impact and wear.

Here's where the Warner & Swasey Company relies on AISI 4340 and 4615/20 to help maintain the rigidity and accuracy for which this 2AC single spindle chucking automatic is fast becoming famous.

Four clutch plates, for example, are made of 4340. Through-hardened for these parts, this 1.85% nickel steel provides dimensional stability in heat-treatment and in high-temperature operation . . . in addition to vital resistance to shock-loading and torsion.

Shafts, guide blocks, studs, plungers, and clamp strips are just a few of the parts in the versatile 2AC made from another nickel alloy steel: AISI 4615/20. These components are carburized and hardened for wear-resistance to maintain accuracy throughout a long service life. And the *uniform* hard case is backed up by a strong, tough core that stands up to severe impact and torsional stresses.

This report is typical of the many coming in from manufacturers who have employed these two General Purpose Steels for a variety of machinery components.

Both these steels are readily available, right off the shelf at your local Steel Service Center. Together they give you a double-barreled way to cut costs and still satisfy almost all your alloy steel needs. Other nickel alloy steels, possessing special properties for specialized applications, are also widely available.

Consider nickel alloy steels for gears, shafts, bearings, and other machine parts you design, order, or use. And for engineering information to help you select the right material for the job you have in mind, just write to Inco.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street INCO New York 5, N. Y.

INCO NICKEL

NICKEL MAKES STEEL PERFORM BETTER LONGER

DRAMATIC PROOF



Turn-Towl's aluminum cabinet wears while others just wear out

Turn-Towl put its own cabinets to the test in the slaughter room of a midwestern meat packing plant. First, the familiar white enamel towel cabinet (like those supplied by most paper towel services) was used a year. Then Turn-Towl's polished aluminum cabinet replaced it — looked just as new 18 months later when it was taken down and photographed.

Other equally dramatic field tests have been made in schools, chemical plants, hospitals. Names are available on request.

For the name of your nearest distributor — who will demonstrate Mosinee Turn-Towl service and arrange for a free trial, if you wish — write Dept 1100.

MOSINEE Sulphate Towels
BAY WEST PAPER CO.
GREEN BAY • WISCONSIN
Subsidiary of Mosinee Paper Mills Co.

For More Facts Write No. 214 on Information Card—Page 32



John Burrows, Plant Mgr., Ralston Purina, Davenport, Iowa, says:

"...Anchor Fence really solved our problems."

"Our plant area used to be what the legal profession calls an 'attractive nuisance.' Children and dogs had access to the grounds. And we had pilferage and traffic tangles to cope with too. The installation of Anchor Fence really solved our problems. Traffic now flows more smoothly, employee cars are protected, and of course the safety of children is no longer a headache. The Anchor men made numerous trips to the plant to be sure the job was tailor-made to our needs."

Call your local Anchor office today for a talk with one of Anchor's trained sales engineers. Write for free catalogue to: ANCHOR FENCE, 6615 Eastern Ave., Baltimore 24, Md.

ANCHOR FENCE
Division of ANCHOR POST PRODUCTS, INC.®

Plants in: Baltimore, Md.; Houston, Texas; and Whittier, Cal. • Sold direct from factory branches in principal cities

For More Facts Write No. 215 on Information Card—Page 32

Products

(Continued from page 104)

inspection of circuits and components within potted, embedded or encapsulated assemblies. Applied as almost colorless liquid—after blending with its curing agent—material cures in place even in totally confined enclosures. Transparent mass that forms has outstanding dielectric properties, good moisture resistance, flexibility and toughness. Curing time can be varied by changing curing temperature, from three days at 25 C to 15 min at 150 C. Neither resin nor curing agent is toxic to skin, and no toxic fumes are given off during mixing or curing. **Dow Corning Corp., Midland, Mich.**

Write No. 27 on Information Card—Page 32

Drum Handling Unit Cuts Work, Danger

An inexpensive attachment reduces work and danger in handling heavy drums. Lift-truck operator merely drops attachment over the drum, tightens a clamp and picks drum up on forks for safe, trouble-free moving. Drum is easily tilted or maneuvered with no danger of dropping load or piercing drum with fork. Attachment is made for rugged duty, has capacity of 1000 lbs, but weighs only 11¾ lbs. Stainless steel units are available for use with chemicals or corrosive liquids. **Holsclaw Bros., Inc., 408 N. Williow Rd., Evansville, Ind.**

Write No. 28 on Information Card—Page 32



"I'll take this home and straighten it out."



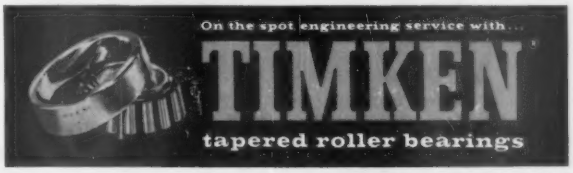
P.A. AND FRIEND SAVE OLIVER TRACTOR ENGINEER UP TO 20% ON FRONT WHEEL BEARINGS

The Oliver Corporation, a major tractor manufacturer, had been using 09000 and 15000 series tapered roller bearings in the front wheels of their tractor with excellent results.

Then the Timken bearing sales engineer (above center) showed the purchasing agent how, with minor design changes, he could substitute Timken® LM bearings and get the same capacity with a 15 to 20% saving. The new bearing is a smaller, lighter, capacity-packed yet lower cost bearing produced with uniform high quality at the Timken Company's revolutionary plant in Bucyrus, Ohio.

The Timken bearing engineer also showed how the new design could lead to further savings in material costs, machining time and seals. And as soon as the tractor engineer was convinced that the lower cost design with the new bearing would perform as well as the old design, he was sold.

This is typical of the kind of savings you can expect when Timken bearing engineers work closely with your engineers. Both graduate engineers, they talk the same language. Timken Company engineers talk your language, too—and always with an eye to lowering costs. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO". Makers of Tapered Roller Bearings, Fine Alloy Steel and Removable Rock Bits. Canadian Division: Canadian Timken, St. Thomas, Ontario.



For More Facts Write No. 216 on Information Card—Page 32

For More Facts About Ad on Following Page Write in No. 217→



Now you see steel

taking up valuable space in your plant

If you use steel in small or moderate lots, why tie up valuable floor space with a steel inventory you might not really need?

Steel

for Strength
. . . Economy
. . . Versatility

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

BETHLEHEM STEEL



Now you don't

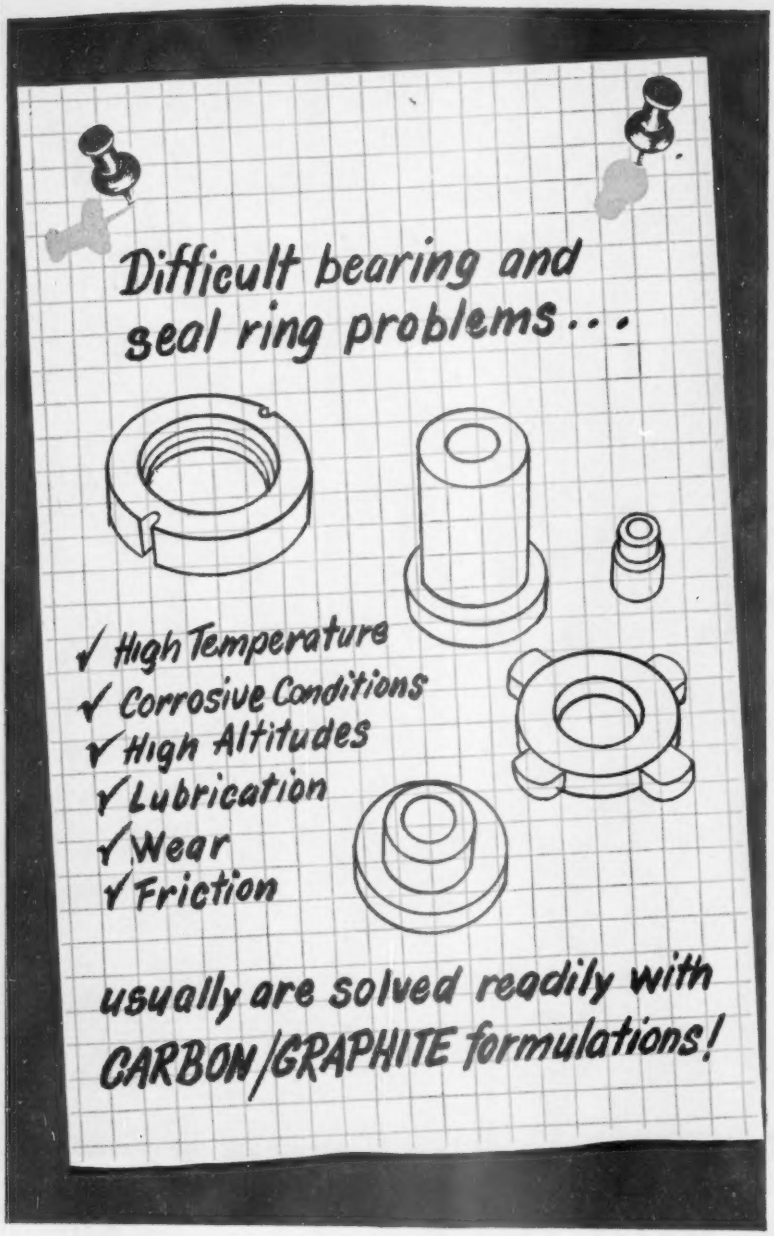
thanks to your local Steel Service Center

STEEL SERVICE CENTER INSTITUTE

Why not save space, and the cost of that space by using the large and varied steel inventory* of your local Steel Service Center?

BETHLEHEM STEEL

*Your local Steel Service Center carries Bethlehem shapes, plates, bars, sheets, tool steels, alloy steels, and other steel products. They'll deliver these top-quality products fast—tailored to your requirements, ready for production.



Many standard grades . . . countless specials . . . with physicals to match your performance requirements exactly. Outline your application for a prompt recommendation. STACKPOLE CARBON CO., St. Marys, Pa.

STACKPOLE

ROCKET NOZZLES • PUMP VANES • TURBINE RINGS • GRAPHITE CHEMICAL ANODES • VOLTAGE REGULATOR DISCS • BRUSHES FOR ALL ROTATING ELECTRICAL EQUIPMENT • WELDING & BRAZING TIPS • ELECTRICAL CONTACTS • CERAMIC MAGNETS • FERROMAGNETIC CORES • FIXED & VARIABLE COMPOSITION RESISTORS . . . and many other carbon, graphite and electronic products.

For More Facts Write No. 218 on Information Card—Page 32

Products

Capscrew Resists Heat, Vibration and Corrosion



A self-locking capscrew with greater tensile strength is specifically designed for use where vibration, corrosion and high temperatures are factors. Configuration is that of conventional hex head capscrew with a double cap, a concave head, and a seating-type all-metal reusable locking collar. Concave design permits head to adjust to torsional load, equalizing load and applying constant pressure. Elasticity is more than three times that of conventional capscrews. **Klincher Kapscrew, Inc., Dept. SLK 433, 2153 Hillside Ave., Indianapolis 18, Ind.**

Write No. 29 on Information Card—Page 32

Indicator Watches Flame Characteristics



A combustion indicator accurately indicates changes in flame characteristics caused by variations in gas fuel supply and

(*Please turn to page* 116)

For More Facts About Ad on Facing Page Write in No. 219→



when you make your next packaging decision, we'd like to be on hand showing you how readily liquids dispensed by the new captive cap closures are used, used up, and bought again

Garmold Plastics Division, Totowa Borough, New Jersey CCA **CONTAINER CORPORATION OF AMERICA, CHICAGO 3, ILLINOIS**

Leading automaker saves because...

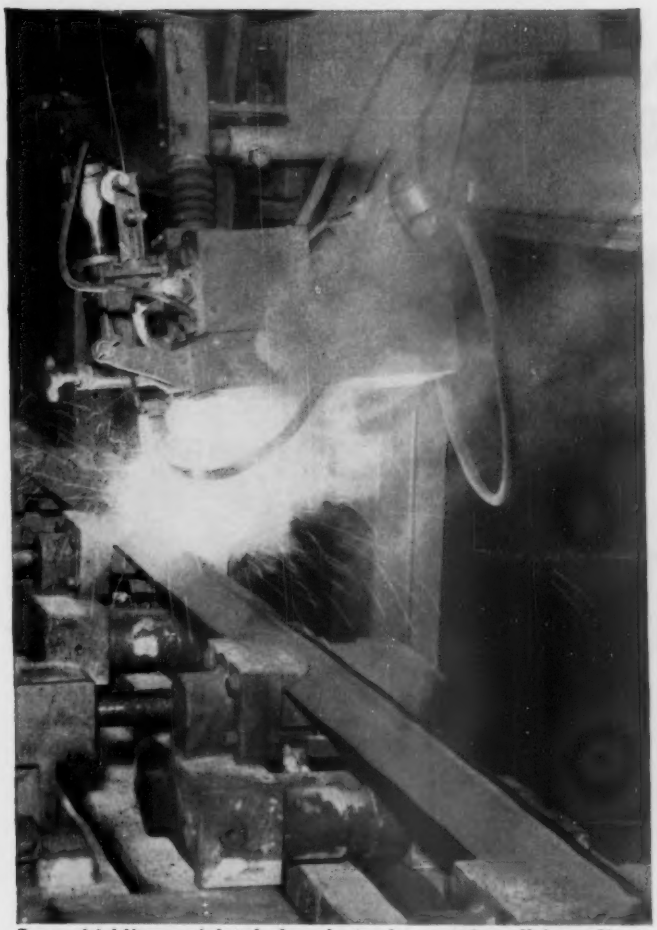
INNERSHIELD ELIMINATES



Two Innershield heads moving horizontally with two moving elliptically weld brackets to rear axle in 4½ seconds. No separate flux or gas systems needed.

COSTLY FLUX HANDLING

Lincoln's new Innershield process is clean. No need for expensive flux handling and recovery systems. No abrasive dust to wear out costly, complex fixtures. Atmosphere stays cleaner, simplifies housekeeping, improves working conditions. No slag removal problems.



Innershield's special tubular electrode contains all ingredients for welding—fluxes, deoxidizers, filler metal. No Argon or CO_2 needed. Here, Innershield welds angle iron for farm machinery part at 80 ipm compared to 40 ipm with CO_2. Tanks, hoppers, structural beams all are now welded with this process, too.



Semi-automatic Innershield Squirt lets an amateur turn pro in minutes. Electrodes bridge gaps caused by poor fitup. Slag flicks off with a swipe of the electrode tip. Have a Lincoln field engineer show you how Innershield Squirt can increase the operating factor and deposition rates on your jobs.



New Innershield brochure available. Also, Weldirectory which provides buying guide for all arc welding electrodes. Get both. Write Lincoln Electric Co., Dept. 2821, Cleveland 17, Ohio.

LINCOLN WELDERS

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT AND ELECTRODES

For More Facts Write No. 220 on Information Card—Page 32

THE BIG DIFFERENCE IN A BRUSH IS THIS NAME ON A BRUSH

When you buy brushes that carry the Osborn name, there's no guesswork. You *know* the quality is there. Osborn quality always pays off . . . jobs are done better, quicker, less expensively.

For over 68 years Osborn has made the widest range of fine power, paint and maintenance brushes available anywhere. And even at this moment, the search for improved products is going on at Osborn to make the best even better. For your copy of our new catalog—write or call *The Osborn Manufacturing Company, Department U-64, 5401 Hamilton Avenue, Cleveland 14, Ohio. Phone ENdicott 1-1900.*

OSBORN

Metal Finishing Machines . . . and Finishing Methods
Power, Paint and Maintenance Brushes • Foundry Production Machinery



For More Facts Write No. 221 on Information Card—Page 32

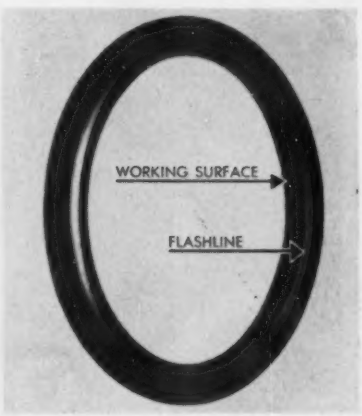
Products

(*Continued from page* 112)

air/gas mixture. Compact, easy to install and operate, this continuous-reading instrument fills urgent need for industrial heating operations where heat transfer rate must be maintained to meet exacting time-temperature cycles, as in glass and metal-working industries. Device indicates changes as little as 5 btu in fuel gas and plus or minus 0.5% air in air/gas mixture, in five seconds. Changes in flame configuration are also indicated. **Selas Corp. of America, Dresher, Pa.**

Write No. 30 on Information Card—Page 32

"O" Ring Seals Have Longer Life

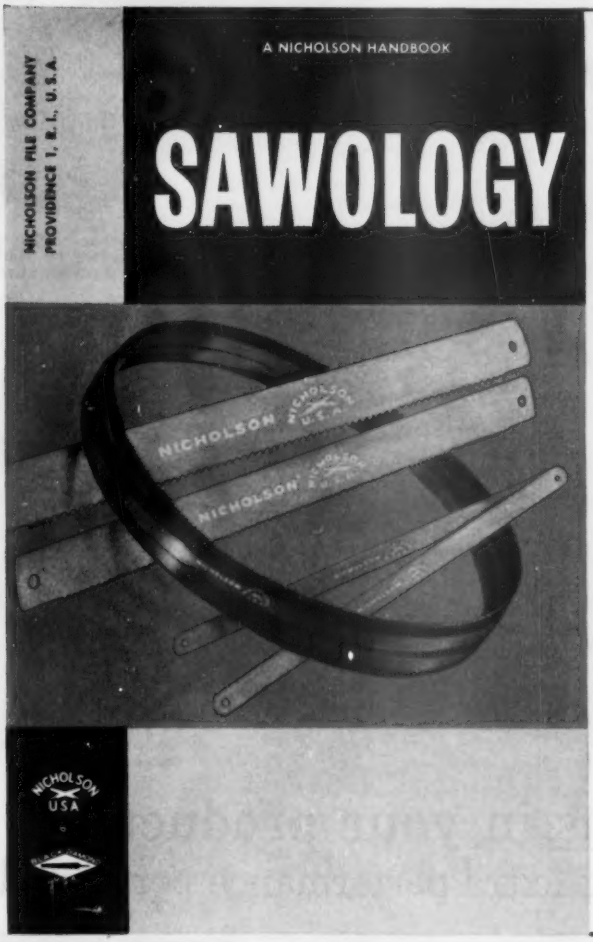


Longer life for "O" ring type seals is achieved by not placing the flashline on the centerline where the ring is subject to wear. Rings come in various sizes, from 1/32 in. to 6½ in. I.D. Two types are available: moving type for small drive belts and reciprocating, oscillating, rotary and pneumatic seals; non-moving, as vacuum seals, seat seals, and flat gaskets. Seals operate efficiently over wide range of pressures, temperatures and tolerances. **Shurclose Seal Co., 17411 E. Warren, Detroit, Mich.**

Write No. 31 on Information Card—Page 32

Coming — May 8, 1961
Purchasing Magazine's
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Sawology

— being a brief account of the History, Manufacture, Variety and Uses of saws for the cutting of ferrous and non-ferrous metals, hard plastics and rubber, wood, and other dense materials . . . A useful handbook and guide for the shop superintendent, production foreman, mechanic, or home craftsman.

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Pages are illustrated with numerous photographs and diagrams. Text is straightforward and easily understood by anyone who deals with metal saws. This complete, handy book contains information for shop superintendent, production foreman, mechanic, machinist, maintenance man, purchasing agent, mechanical trainee . . . anyone connected with the management or operation of your shop, plant or industry.

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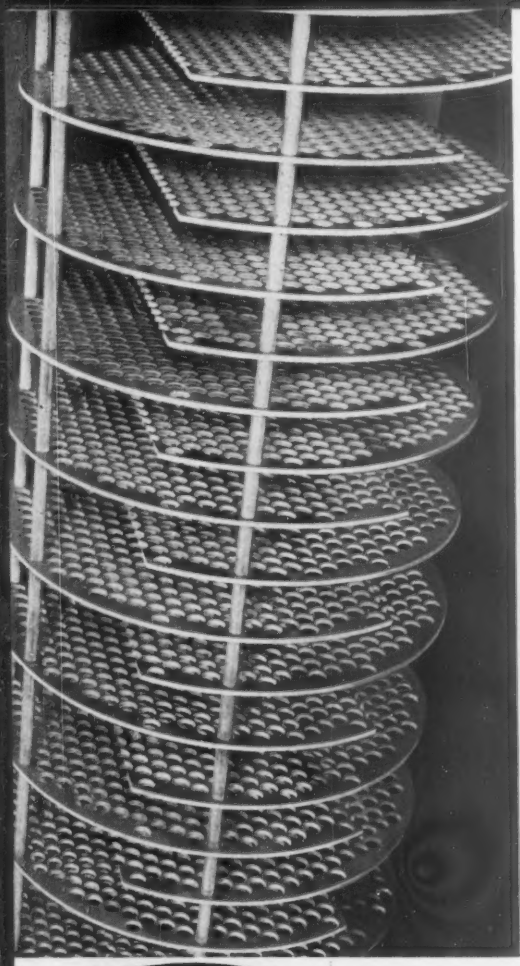
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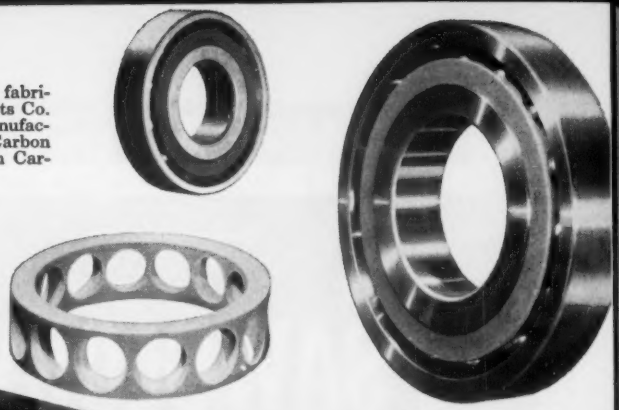
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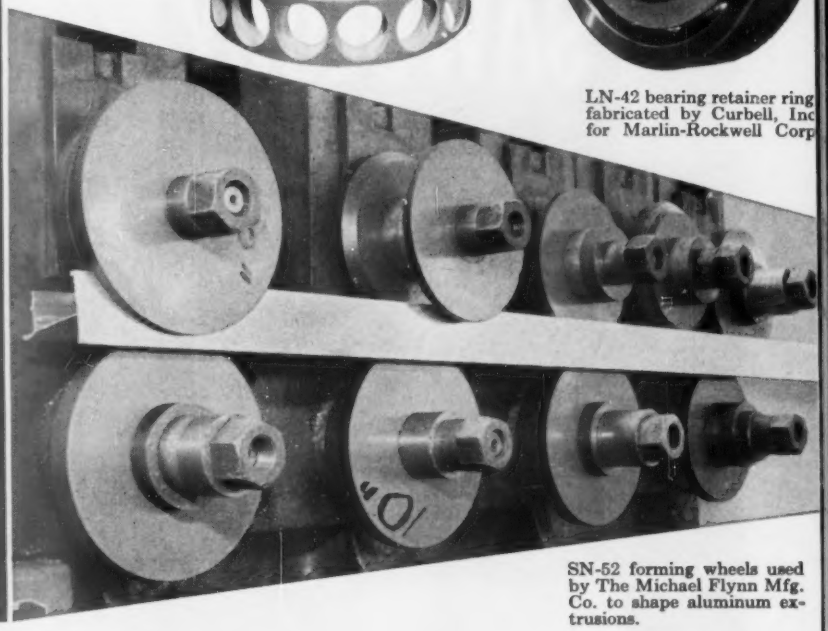
For More Facts Write No. 222 on Information Card—Page 32



CHN-5 baffles (left) fabricated by Jaco Products Co. for heat exchanger manufactured by National Carbon Co., division of Union Carbide Corp.



LN-42 bearing retainer ring fabricated by Curbell, Inc for Marlin-Rockwell Corp



SN-52 forming wheels used by The Michael Flynn Mfg. Co. to shape aluminum extrusions.

FORMICA® puts the plus in your products...

with mechanical grades offering extra performance per pound

Formica mechanical grades have a remarkable performance-to-weight ratio that can put a new plus in your products. Here's how. First, they're extremely light—weigh only half as much as aluminum. Second, they offer many of the advantages of metals plus many more useful properties such as sound, shock and vibration absorbency, abrasion resistance, insulation, corrosion resistance. In addition, most Formica mechanical grades give you bonus electrical or chemical properties.

Check the chart at right. Then write for data on the Formica grades you need for extra performance and added sales power.

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GRADE	DESCRIPTION
S-52	Paper base-phenolic. Smooth, strong, hard; dent and wear resistant surface; excellent machining. For spinning chucks, jigs, templates, forming dies, structural uses.
C—End Grain	Cotton fabric-phenolic. Strong, abrasion resistant, stable in lube oil; wears evenly, shock absorbent, vibration-free. For machine tool ways. Supports 60 psi at 100 - 500 ft. per minute. Readily machined and installed.
C & CG	Coarse weave cotton fabric-phenolic. Strong, tough, good impact strength, readily machined. CG is heat stabilized for dimensionally accurate gears.
L-42	Fine weave cotton fabric-phenolic. Strong, tough, hard. Excellent machining to extremely smooth finish. For ball-bearing retainer rings, gibs, water-free bearing surfaces and lesser ways.
FF-60	Glass cloth-melamine. High impact, great mechanical strength, flame retardant. For mechanical applications requiring good electrical properties. Meets MIL-P-15037C type GME.
AA-53	Asbestos fabric-phenolic. Strong, high impact, good moisture resistant properties, readily machined. For pump vanes. Also other mechanical applications demanding dimensional stability in similar heat/moisture environments.

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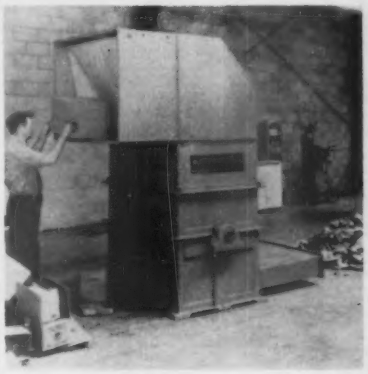
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ALABAMA:
Birmingham.....Vulcan Electric Distrs.
ARIZONA:
Phoenix.....Kiva Sales Co. Inc.
CALIFORNIA:
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El Cajon.....Dutton Mfg. Co.
Los Angeles.....Conroy & Knowlton, Inc.
Leed Insulator Corp.
Tri-State Supply Co.
Plastic Stamping, Inc. (Pomona)
San Francisco.....Laminated Fabricators
Tri-State Supply Corp.
San Diego.....Ridout & Co.
COLORADO:
Denver.....Plasticrafts, Inc.
Englewood.....Regal Plastic Supply Co.
CONNECTICUT:
Unionville.....Fabricon Corp.
DISTRICT OF COLUMBIA:
Arlington.....Milton H. Brooks & Son
FLORIDA:
Miami.....Modern Plastics
GEORGIA:
Atlanta.....Southeastern Plastic Sales Co.
ILLINOIS:
Chicago.....Colonial Kolonite Co.
Tingstol Co.
INDIANA:
Indianapolis.....Hyaline Plastics Corp.
Premier-Stamping Corp.
Michigan City.....Television Associates, Inc.
KENTUCKY:
Louisville.....C. Lee Cook Co.
LOUISIANA:
New Orleans.....Prager, Inc.
MARYLAND:
Baltimore.....Diecraft
MASSACHUSETTS:
Boston.....Insulating Fabricators of N.E.
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Detroit.....Chas. R. Mueller & Sons
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Jackson.....Plastigage Corp.
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St. Paul.....Plastics, Inc.
MISSOURI:
Kansas City.....Brook Beatty Co.
St. Louis.....Harris Mfg. Co.
NEW JERSEY:
East Rutherford.....Insulating Fabricators, Inc.
NEW YORK:
Buffalo.....Curbell, Inc.
Long Island.....Thomas J. Long, Inc.
New York City...Commercial Plastics & Supply Co.
Richmond Hill, Queens.....Comco Plastics
Rochester.....General Circuits, Inc.
Syosset, L. I.....Frank Products
West Nyack.....Plasticraft Products Corp.
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Gibsonville.....Engineered Plastics, Inc.
SOUTH CAROLINA:
Spartanburg.....Insulating Fabricators, Inc.
OHIO:
Cleveland.....Jaco Products Co.
Cincinnati.....Durham Plastics, Inc.
Columbus.....Dayton Plastics, Inc.
Dayton.....Dayton Plastics, Inc.
OKLAHOMA:
Tulsa.....Ideal Specialty Co.
PENNSYLVANIA:
Harrisburg.....D. & H. Dist. Co.
Philadelphia.....Laminated Materials
Mascher & Lippincott
Pittsburgh.....Earl B. Beach Co.
Chrishon Fabricators, Inc.
TENNESSEE:
Memphis.....Norrell, Inc.
Nashville.....Plastic Fabricators Co.
TEXAS:
Fort Worth.....Plastelite Engineering Co.
Service Engineers, Inc.
Standard Parts & Equipment Corp.
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Replacement Parts Co.
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So. Salt Lake City.....Plastic Products of Utah
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Richmond.....Plywood Center
WASHINGTON:
Seattle.....Tri-State Supply Co.
WISCONSIN:
Milwaukee.....General Plastics, Inc.
West Allis.....Colonial Kolonite Co.

For More Facts Write No. 223
on Information Card—Page 32

Products

Carton Shredder Cuts Manpower, Storage Needs



A carton shredder drastically reduces manpower and storage needs for handling discards and reject cardboard cartons and cases. In automatic operations, feed-off conveyor line can carry discards directly to shredder where they are automatically chopped down to pieces from 4 to 12 in. in size, as desired. Pieces are propelled out of shredder and can be fed either directly or through air-flow system to bins that feed bailer or incinerator. Shredder can also be hand fed. **Mitts & Merrill, 1009 S. Water St., Saginaw, Mich.**

Write No. 32 on Information Card—Page 32

Welding Process Offers Many Advantages



A welding process for mild steel combines use of carbon dioxide and low alloy steel welding wire. Advantages include spatter-free welding, open arc, spray-type transfer, good weld appearance, sound welds, economical disposi-

(*Please turn to page* 122)

Hints on fluorescent starter selection



G-E FS-400 STARTERS GIVE YOU FULL RATED LIFE FROM NEW G-E "PREMIUM 3" LAMPS

You get 17% more light — even in old fixtures — from new G-E Premium 3 lamps! And, to help you get full rated life from these lamps, General Electric recommends that *only* G-E FS-400 Watchdog* Starters be used. They protect lamp life by preventing "instant starts" before cathodes are properly pre-heated. FS-400 Watchdog Starters also protect standard lamps; last much longer than ordinary starters; automatically cut out blinking lamps.

Ask your General Electric distributor for the "G-E Starter Selection Chart and Maintenance Guide for Fluorescent Lighting." General Electric Company, Wiring Device Dept., Providence 7, Rhode Island.

*Registered Trade-mark of General Electric Company

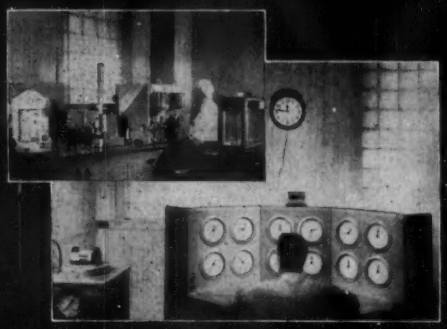
GENERAL ELECTRIC

For More Facts Write No. 224
on Information Card—Page 32

. . . add our manpower to this picture



Your orders are processed and expedited from this general office and plant administration building.



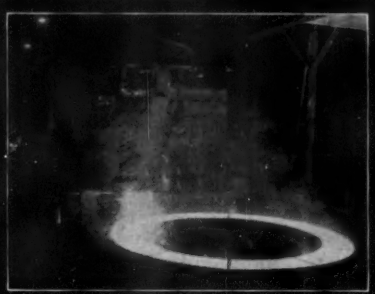
Metallurgical quality control with complete modern testing methods precedes and follows every job from order entry to shipping dock.



Electric furnace steel poured to the vacuum stream degassing chambers meets the most critical specifications for steel components.



The 3000 ton "squeeze" starts a 90 inch x 120 ton ingot on its way to become a forged steel turbine rotor, a diesel crankshaft, a ship's drive shafting.



Steel Castings to 400,000# are pulled from the sand in these new modern foundries.



Modern facilities in our 260,000 square feet of machine shops serve our steel foundries and forge shops.

STEEL FORGINGS FOR...

- Diesel Crankshafts
- Connecting Rods
- Ship's Shafting
- Turbine Rotors
- Bending Rolls
- Rolling Mills
- Industrial Presses
- Steam Hammers

STEEL CASTINGS FOR...

- Steam Hammers
- Ship's Components
- Rolling Mills
- Industrial Presses
- Turbines
- Hydro-electric Engines
- Crushers
- Cement Plant Equipment

Ingots for manufacturers who do not make their own steel.

ERIE FORGE & STEEL CORPORATION

ERIE, PENNSYLVANIA

Another Hotel Reservation first for business travellers — from Sheraton



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Now you can travel with a guaranteed hotel confirmation written in your own office the instant you phone for a *RESERVATRON* reservation.

There's *no work* in the way it works:

1. You, your secretary or travel department calls the nearest Sheraton Hotel or Reservation Office.
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Self-Confirmation saves time and peace of mind!
Eliminates paper work, costly phone calls and wires!
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I am interested in knowing more about Sheraton's unique SELF-CONFIRMATION Plan:

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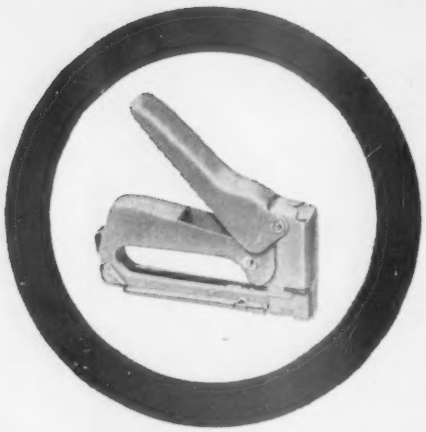
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Truarc Rings cut assembly time 60%

This production advantage was achieved by Swingline, Inc., with two Truarc retaining rings: a Series 5139 Prong-lock ring and Series 5144 Reinforced E-Ring. They also saved $25 per thousand units and improved the product design by providing resilient end-play take-up . . . eliminating looseness or binding in the parts. Truarc dispensers—loaded with pre-stacked ROL-PAK® cartridges—make ring application simple, fast and economical.

Truarc Rings come in 50 functionally different types . . . as many as 97 different sizes within a type . . . 6 metal specifications and 13 finishes. Write for Catalog 10-58 which shows many specific examples of ring applications. For immediate action, call your nearest Factory Representative or Authorized Truarc Distributor. He's in your Classified Telephone Directory under: "Rings, Retaining."

1.2

WALDES TRUARC® RETAINING RINGS

WALDES KOHINOOR, INC., 47-16 Austel Place, Long Island City 1, N.Y.

9 OUT OF 10 PRODUCTS CAN BE IMPROVED WITH TRUARC RETAINING RINGS
For More Facts Write No. 227 on Information Card—Page 32

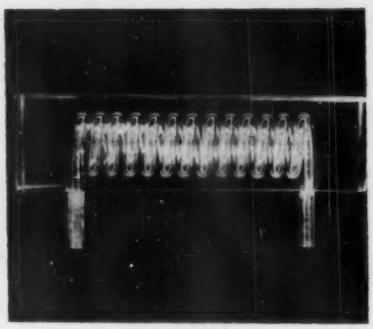
Products

(*Continued from page* 119)

tion rates, continuous wire feed for high work factor and low cost shielding gas. Wire can be used for single or multipass mild steel applications with deposition rates varying from 7 lbs/hr to 15-lbs/hr, depending on size of wire and amperage. Wire is available in .045 and .054 in. diameters. **Air Reduction Sales Co., 150 E. 42nd St., New York 17, N. Y.**

Write No. 33 on Information Card—Page 32

Epoxy Resin Makes Transparent Castings



Completely transparent castings can now be made easily from epoxy resin in flexible or high impact as well as rigid form, as a result of the development of special new hardeners. No vacuum equipment or other complex apparatus is needed. Cure of several hours at 180 to 210 deg. F is required. Finished casting has 90% light transmission and a smooth, hard, bubble-free, nontacky surface that does not crack or craze and that resists distortion even when exposed to extremes of temperature or humidity. **Marblette Corp., 37-31 Thirtieth St., Long Island City 1, N. Y.**

Write No. 34 on Information Card—Page 32

Self-Crowning Abrasive Bands Grind Contours

Coated abrasive bands and belts which assume any desired degree of crown when run on inflatable rubber drums are suited for both stock removal and polishing. Products are recommended for offhand work in confined areas, and particularly on con-

(*Please turn to page* 130)

For More Facts About Ad on Facing Page Write in No. 228→

TEAR OUT AND FILE

Are you buying

LAMINATED PLASTIC

or VULCANIZED FIBR

AS RAW MATERIALS OR FABRICATED PART

Then TAYLOR FIBRE

BELONGS AS AN APPROVED SUP

Taylor has the experience . . . was organized in 1891, pioneered in the development of vulcanized fibre, a nonresinous laminate, is a production leader. It is also one of the major manufacturers of resinous laminated plastics, offering more than 50 grades to meet almost any requirement.

Taylor has the facilities. Its Norristown, Pa., plant, comprising some 300,000 sq. ft., produces both vulcanized fibre and laminated plastics . . . is one of the most completely integrated in the industry . . . even makes its own paper and a large percentage of its own resins. The La Verne, Calif., plant, with over 45,000 sq. ft. of floor space, specializes in the manufacture of laminated plastics for West Coast users.

Taylor maintains a separate laboratory devoted exclusively to basic research in vulcanized fibre and laminated plastics, including special research in the application of these materials in aircraft, missile, nuclear energy and other fields opened up by the new technologies.

Taylor has the products . . . offers m grades of standard laminated plastics Tayloron® materials, pre-impregnate molding compounds, vulcanized fib windings and a number of composi including various combinations of vulc laminates, metals and rubbers.

Taylor has the service organization . 13 fully staffed sales offices in major a out the country . . . employs a group engineers and technicians to assist cus neering personnel if desired.

In production of basic materials it has pio developments in plastics technology most modern equipment. In fabricatio experience, manpower and equipmen parts to specifications in any required on schedule, no matter how complex th include filament windings, moldings, ticated assemblies and combinations

Taylo

LAMINATED PLASTICS VULCANIZ

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CO.
UPPLIER

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f vulcanized fibre,

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uired quantity and
lex the part. These
ings, and sophis-
tions of materials.

lor
ANIZED FIBRE

TAYLOR LAMINATED PLASTICS

SEND FOR A COMPLETE TAYLOR SELECTION GUIDE

. . . use it to make tentative selections of the laminated plastics that most nearly fit your requirements. Then consult us on the design and application of laminated plastics and parts fabricated from them before making a final decision.

TAYLOR FIBRE CO.
Norristown, Pa.
West Coast plant • La Verne, Calif.

☐ **Please send me a copy of your laminated plastics selection guide.**

☐ **Please send me technical data sheet 2-0 on vulcanized fibre.**

I am considering laminated plastics or vulcanized fibre for

_____

_____

Name_____ **Title**_____

Company_____

Street_____

City_____ **Zone**____ **State**_____

TAYLOR LAMINATED PLASTICS

Taylor Grade	NEMA Grade	Military Specifica
MECHANICAL GRAD		
X	X	none
XP	XP	none
C	C	MIL-P-15 TYPE FB
C-7	CF	MIL-P-8
L	L	MIL-P-15 TYPE FB
AA	AA	MIL-P-8
ELECTRICAL GRADES		
XX	XX	MIL-P-3 TYPE PB
XXP	XXP	none
XXX	XXX	MIL-P-3 TYPE PB
XXXP	XXXP	MIL-P-3 TYPE PE
XXXP-242	XXXP	MIL-P-3 TYPE PE
LE	LE	MIL-P-1 TYPE FE
NS	N-1	MIL-P-1 TYPE N
GENERAL PURPOSE		
CE	CE	MIL-P-1 TYPE FI
A	A	none
G-3	G-3	none
G-5	G-5	MIL-P-1 TYPE G
GSC	G-7	MIL-P-9 TYPE G
GEC-500	G-10	MIL-P-1 TYPE G
GEC-111	G-11	MIL-P-1 TYPE G
XY-1	FR-3	MIL-P-2 (Ships) TYPE P

FIRST CLASS
Permit No. 169
Norristown, Pa.

BUSINESS REPLY MAIL
No postage necessary if mailed in the United States

Postage will be paid by—

TAYLOR FIBRE CO.
Norristown 36, Pa.

THIS LAMINATED PLASTICS

CODE:

F, Fair **G,** Good **E,** Excellent
Comparative prices/lb. are based on the price of Grade XP as 1.0 • To be used as a guide only.

itary cification	Description	Color	Sheets: Approx. Sizes (in.)	Sheets: Thickness Range (in.)	Tubing I. D. Max. (in.)	Rod Diam. Max. (in.)	Standard Copper-Clad Grades Available	Flame Resistant Grades Available	Dimensional Stability	Physical: Water Absorption 24 hrs. immersion % max.	Physical: Specific Gravity
ADES											
ne	phenolic resin, paper base	black, natural, chocolate	49 x 49	.015 -2	30	2	—	YES	F	5.0	1.38
ne	phenolic resin, paper base	natural, black, chocolate	49 x 49	.015 - ¼	—	—	YES	—	F	3.0	1.32
L-P-15035B PE FBM	phenolic resin, cotton fabric base	black, natural	49 x 49	.010 -11	30	4	—	—	F	4.0	1.35
L-P-8655A	phenolic resin, cotton fabric base	black, natural	49 x 49	1/64 - ¼	—	—	—	—	F	3.5	1.34
L-P-15035B PE FBI	phenolic resin, fine weave cotton fabric base	black, natural	49 x 49	.010 -2	30	4	—	—	G	2.2	1.35
L-P-8059A	phenolic resin, asbestos fabric base	natural	49 x 49	1/16 -2	—	—	—	—	F	2.8	1.65
DES											
IL-P-3115B YPE PBG	phenolic resin, paper base	black, natural	49 x 49	.015 -2	30	2	—	YES	E	1.8	1.36
ne	phenolic resin, paper base	black, natural	49 x 49	.015 - ¼	—	—	—	YES	G	1.5	1.32
IL-P-3115B YPE PBE	phenolic resin, paper base	black, natural	49 x 49	.015 -2	1¾	2	—	YES	E	1.2	1.36
IL-P-3115B YPE PBE-P	phenolic resin, paper base	natural	49 x 49	.020 - ¼	—	—	YES	YES	E	0.8	1.32
IL-P-3115B YPE PBE-P	phenolic resin, paper base	natural	49 x 49	.020 - ¼	—	—	YES	—	F	0.5	1.32
IL-P-15035B YPE FBE	phenolic resin, fine weave cotton fabric base	black, natural	49 x 49	.010 -2	30	4	—	—	G	1.8	1.35
IL-P-15047B YPE NPG	phenolic resin, nylon fabric base	natural	49 x 49	.015 -6	30	2	—	—	—	0.5	1.15
SE GRADES											
IL-P-15035B YPE FBG	phenolic resin, cotton fabric base	black, natural	49 x 49	.010 -2	30	4	—	—	G	2.0	1.35
ne	phenolic resin, asbestos paper base	natural	49 x 49	.025 -2	30	—	—	—	F	1.4	1.60
ne	phenolic resin, glass fabric	natural	49 x 49	.015 -2	30	4	—	—	G	2.5	1.70
IL-P-15037B YPE GMG	melamine resin, glass fabric	natural	49 x 49	.015 -2	30	4	—	*	G	2.5	1.92
IL-P-997B YPE GSG	silicone resin, glass fabric	white	24 x 52	.010 -1 ½	30	—	—	*	E	0.4	1.88
IL-P-18177 YPE GEE	epoxy resin, glass fabric	natural	37 x 49	.010 -1	30	1	YES	—	G	0.2	1.80
IL-P-18177B YPE GEB	epoxy resin, glass fabric	natural	37 x 49	.010 -1	—	—	YES	*	E	0.2	1.8
IL-P-22324 Ships) YPE PEE	epoxy resin, paper base	pale yellow	37 x 49	1/32 - ½	—	—	YES	*	G	0.4	1.5

*These grades are already flame retardant.

SEND FOR DATA SHEET 2-0 FOR TECHNICAL

PLASTICS SELECTION GUIDE

Qualitative rating of characteri
minimum physical, mechanica
of a rating or property value
property or that the value is n
for technical data, write Taylo

Dimensional Stability	Physical Properties				Mechanical Prope		
	Water Absorption 24 hrs. immersion % max.	Specific Gravity	Cu. in. per lb.	Heat Resistance (max.) continuous use, °F.	Flexural Strength flatwise (psi min.)		
					lengthwise	crosswise	leng wise
F	5.0	1.38	20	F 225-250	G 26,000	G 24,000	G 21
F	3.0	1.32	21	G 250-275	F 18,000	F 13,000	F 15
F	4.0	1.35	20.5	F 200-225	F 17,000	F 16,000	F 12
F	3.5	1.34	20.7	F 180-200	G 21,000	G 20,000	F 9
G	2.2	1.35	20.5	F 200-225	F 16,000	F 15,000	F 15
F	2.8	1.65	16.8	E 300-325	F 17,000	F 15,000	F 11
E	1.8	1.36	21.3	G 250-275	F 16,000	F 14,500	F 17
G	1.5	1.32	21	G 250-275	F 17,000	F 14,000	F 13
E	1.2	1.36	20.3	G 250-275	F 14,000	F 12,000	F 16
E	0.8	1.32	21	G 250-275	F 14,000	F 12,000	F 12
F	0.5	1.32	21	G 250-275	F 13,000	F 11,000	F 12
G	1.8	1.35	20.5	F 225-250	F 15,500	F 13,500	F 13
—	0.5	1.15	24.1	F 200-225	F 11,000	F 10,000	F 9
G	2.0	1.35	20.5	F 200-225	F 17,000	F 15,000	F 1
F	1.4	1.60	17.3	G 270-290	F 13,500	F 12,000	F 10
G	2.5	1.70	16.3	G 290-310	G 22,000	G 20,000	G 2
G	2.5	1.92	14.4	E 300-325	E 60,000	E 50,000	E 4
E	0.4	1.88	14.7	E 450-500	G 20,500	G 18,500	G 2
G	0.2	1.80	15.4	F 225-250	E 60,000	E 50,000	E 4
E	0.2	1.8	15.4	E 350	E 60,000 †68%	E 50,000	E 4
G	0.4	1.5	18.4	G 250-275	G 26,000	G 20,000	G 2

ardant.

†Only 50% minimum fle

TECHNICAL DATA ON VULCANIZED

DE SHOULD BE IN YOUR FILE

acteristics of various grades of Taylor laminated plastics, with maximum/
anical and electrical property values for sheets 1/16 in. thick. No listing
alue indicates either that other laminate grades are preferred for that
e is not significant. Other grades are available for specific applications—
Taylor Fibre Co., Norristown, Pa.

Properties		Electrical Properties						
Tensile Strength (psi min.)		Dielectric Strength parallel to laminations (k.v. min.)		Dissipation Factor (power factor) (max.)			Insulation Resistance (megohms) cond. C-96/35/90	Arc Resistance (sec.-min.) cond. A
lengthwise	crosswise	cond. A	cond. D-48/50	60 cycles cond. A	10^6 cycles cond. A	10^6 cycles cond. D-24/23		
G 21,000	G 17,000	G 50.0	5.0	F 0.200	F 0.045	G 0.050	—	G 10
F 15,000	F 11,000	E 60.0	F 15.0	F 0.100	F 0.050	F 0.070	200	G 10
F 12,000	F 9,000	F 20.0	2.5	—	—	—	—	G 10
F 9,500	F 9,000	F 20.0	2.5	—	—	—	—	G 10
F 15,000	F 12,000	F 20.0	2.5	F 0.250	F 0.055	F 0.070	—	G 10
F 11,000	F 9,000	10.0	2.5	—	—	—	—	G 10
F 17,000	F 14,000	E 60.0	F 10.0	F 0.100	F 0.050	F 0.060	—	G 10
F 13,000	F 10,000	E 60.0	G 20.0	G 0.070	F 0.040	G 0.045	G 1,000	G 10
F 16,000	F 13,000	E 60.0	G 25.0	F 0.100	G 0.035	G 0.045	G 1,000	G 10
F 12,800	F 9,800	E 60.0	G 30.0	G 0.05	G 0.033	E 0.034	G 2,000	G 10
F 12,400	F 9,500	E 65.0	E 45.0	G 0.040	G 0.030	E 0.032	E 400,000	G 10
F 13,500	F 10,000	G 45.0	F 10.0	F 0.250	F 0.050	F 0.065	—	G 10
F 9,000	F 8,500	E 65.0	E 45.0	E —	G 0.034	E 0.035	E 350,000	G 10
F 11,000	8,000	F 35.0	5.0	—	0.100	—	—	G 10
F 10,500	F 8,500	10.0	2.5	—	—	—	—	G 10
G 24,000	G 22,000	F 20.0	5.0	—	G 0.030	F 0.070	200	G 10
E 40,000	E 34,000	F 30.0	F 10.0	—	E 0.018	F 0.070	200	E 180
G 23,000	G 19,000	G 40.0	G 20.0	E 0.004	E 0.003	E 0.020	E 500,000	E 180
E 45,000	E 40,000	G 45.0	E 35.0	E 0.018	E 0.020	E 0.030	E 350,000	—
E 45,000	E 40,000	G 45.0	E 35.0	E 0.006	E 0.020	E 0.030	E 350,000	—
G 20,000	G 15,000	E 80.0	E 30.0	E 0.02	E 0.026	E 0.030	E 150,000	—

um flexural strength retention is required at 300°F. (⅛ in. sheet) per MIL-P-18177B, Type GEB

ED FIBRE

Taylor

LAMINATED PLASTICS VULCANIZED FIBRE

Fabrication			Chemical Resistance			AIEE Insulation Class	Comparative Price per Pound	Principal Characteristics	Taylor Grade
Hot Punch	Cold Punch	Machinability	Acids	Bases	Solvents				
F	—	F	F	F	F	A	.9	Excellent mechanical strength, fair machinability, fair electrical properties under dry conditions.	X
E	F	G	F	F	F	A	1.0	Punching grade. Sheets up to 1/32 inch can be cold punched; up to 1/8 inch hot punched.	XP
G	G	E	F	G	G	A	1.5	For mechanical applications requiring toughness and impact strength.	C
G	G	E	F	G	G	A	1.5	Post-forming grade. Special fabric permits draw and stretch to take place in forming.	C-7
E	E	E	G	G	G	A	1.9	Fine cotton weave base for mechanical uses requiring good machinability.	L
F	—	F	F	F	G	B	3.0	More resistant to heat and stronger than A.	AA
F	—	G	G	G	G	A	1.2	General purpose electrical grade. Good strength, moisture resistance, electrical properties.	XX
G	F	G	F	G	F	A	1.2	Better than XX in electrical and moisture resistance and more suitable for hot punching.	XXP
F	—	G	G	G	E	A	1.2	Low moisture absorption and dimensional change. Best electrical grade of paper base molded tubing.	XXX
G	—	G	G	F	F	A	1.3	Better electrical properties than XXX and more suitable for hot punching.	XXXP
F	E	G	F	F	F	A	1.3	Excellent insulation resistance under high humidity conditions. Can be cold punched up to 1/16" thick.	XXXP-242
G	G	E	G	G	G	A	1.9	Fine weave canvas base electrical grade for fine machining.	LE
E	G	E	G	G	G	A	3.9	High insulation resistance with high impact strength plus formability.	NS
G	G	E	G	G	G	A	1.5	Electrical applications requiring greater strength than XX; mechanical appl. req. greater moisture resistance than C.	CE
F	—	F	F	F	G	B	1.1	For heat-resisting applications.	A
F	F	F	F	F	G	B	2.9	For mechanical applications requiring heat resistance.	G-3
F	F	F	—	E	E	B	2.5	High mechanical strength. Excellent arc resistance and electrical properties. Will not support combustion.	G-5
F	F	F	G	F	E	H	6.5	High heat resistance. Excellent electrical properties, highest arc resistance. Will not support combustion.	GSC
G	E	G	G	G	G	B	3.5	Extremely high flexural, impact and bond strength. Low moisture absorption. High insulation resistance.	GEC-500
F	F	F	E	E	G	B	3.5	High mechanical strength retention at elevated temperatures. Will not support combustion.	GEC-111
E	E	E	G	—	F	A	2.5	Combines some of the superior performance characteristics of glass epoxy laminates with fabrication ease of paper phenolic laminates. Self extinguishing.	XY-1

Printed in U.S.A.



BIG PICTURE—100 TIMES ACTUAL SIZE—

checks ball bearing geometry

BCA engineers take a close, "big" look at the configuration of inner and outer rings of ball bearings with this contour projector. It magnifies profiles up to 100 times actual size—makes possible extremely accurate measurements and control of all geometric characteristics of raceway rings.

This contour projector provides essential information for BCA research in developing new and modified bearing designs. It also evaluates the production performance of precision tools and machine set-ups by checking the profiles of production raceway rings against precise design specifications. This device is only one of many BCA quality control measures that help assure uniformly high ball bearing quality.

New BCA laboratory facilities also include a variety of specially designed testing machines that simulate actual or exaggerated operating conditions. On this equipment, bearings are studied under exact operating conditions of the customer's application . . . and tested to *exceed* his specifications.

BCA ball bearings for original equipment as well as replacement use are made in a complete range of types and sizes. They serve practically every kind of industry . . . automotive, machine tool, construction and agricultural equipment, to name a few. For complete information, for experienced engineering counsel on bearing applications, contact: Bearings Company of America, Division of Federal-Mogul-Bower Bearings, Inc., Lancaster, Pa.

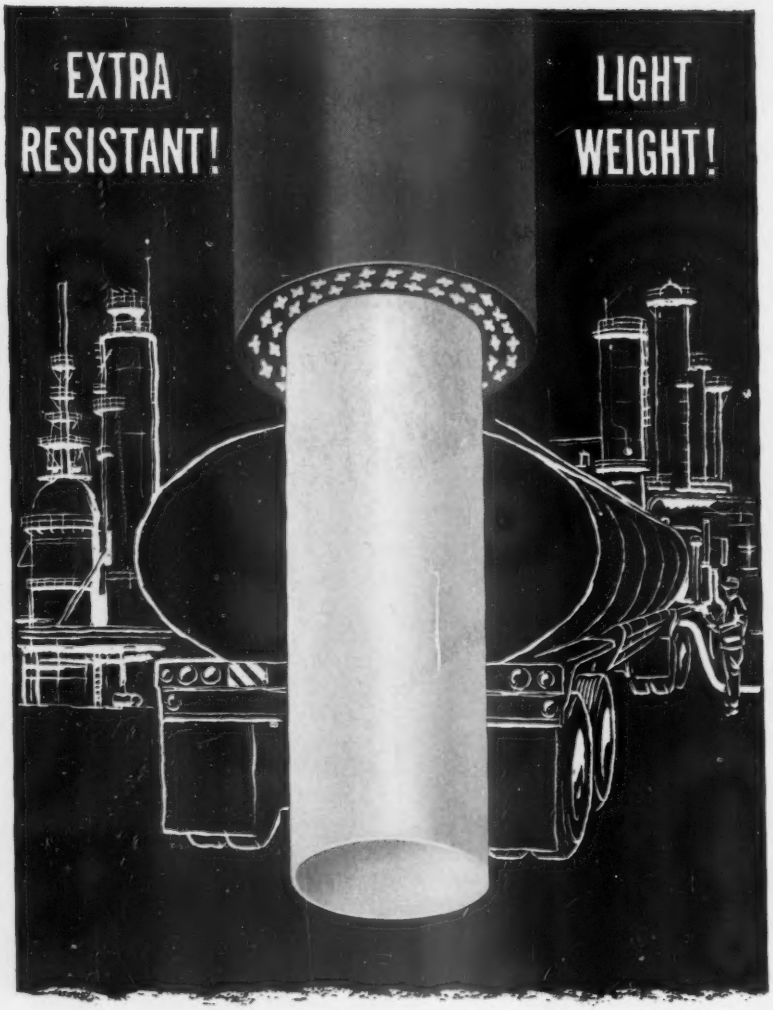
BCA

BEARINGS COMPANY OF AMERICA

ball bearings

DIVISION OF
FEDERAL-MOGUL-BOWER
BEARINGS, INC.

For More Facts Write No. 229 on Information Card—Page 32



Thin-wall TEFLON* tubing for large diameter hose liners

The unique properties of "Teflon" . . . the weight saving of walls as thin as 40 mils . . . the large diameters needed in steam, chemical and food products hose liners. R/M now gives you all these advantages in either TFE or FEP "Teflon" tubing meeting latest FDA requirements.

Diameters to 4 in. available in standard 15′ 6″ lengths . . . etched on OD for bonding. Cover these liners with any material you want—confident that you have used the best liners available for chemical, acid and moisture resistance.

This is the kind of "Teflon" experience for which R/M is known. If you have an application where "Teflon" can do the job better, R/M can help you do it best. Write for complete information on large diameter thin-wall tubing and other R/M "Teflon" products or contact your nearest R/M district office.

*Registered TM for Du Pont fluorocarbon resins

RM

PLASTIC PRODUCTS DIVISION
RAYBESTOS-MANHATTAN, INC.
Manheim, Pa.

BIRMINGHAM 1 • CHICAGO 31 • CLEVELAND 16 • DALLAS 26 • DENVER 16 • DETROIT 2
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SPECIALISTS IN ASBESTOS, RUBBER, ENGINEERED PLASTICS, SINTERED METAL

For More Facts Write No. 230 on Information Card—Page 32

Products

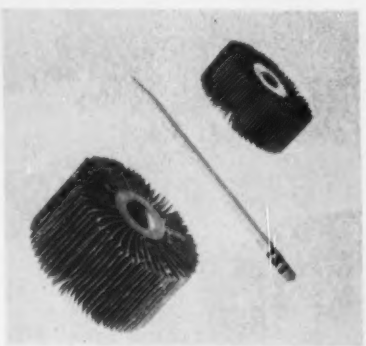
(*Continued from page* 122)

cave or other contoured surfaces. Crowned shape eliminates edge cutting that occurs when a flat band is inadvertently tilted, permits accurate grinding on extremely narrow areas, and diminishes chattering when operated at low pressures. Bands are made in grits 40 through 180. **Behr-Manning Co., Div. of Norton Co., Troy, N. Y.**



Write No. 35 on Information Card—Page 32

Tiny Grinding Wheel Finishes Tight Corners



A miniature flexible grinding wheel is particularly useful for finishing tight corners and hard-to-reach places. Available in 2½ or 3 in. diameter, wheel can be used on fixed or portable shafts at speeds up to 15,000 rpm. Constructed of scores of thin, flexible abrasive strips, wheel comes in a variety of grits for wood, metal or plastic usage. Fresh abrasive is constantly exposed as wheel is used. It is adaptable to chucks or threaded spindles. **Merit Products, Inc., 3691 Lenawee Ave., Los Angeles 16, Calif.**

Write No. 36 on Information Card—Page 32

WESTINGHOUSE improves new transformers 5 ways with aid of REVERE ROLLED COPPER in coil winding

New design extends range of lightweight pole-type transformers to 500 Kva

In seeking to solve the problem of cross-sectional requirements in the winding of conductors in low-voltage coils of large Distribution Transformers, Westinghouse design engineers noted that their primary concern was: How to reduce the number of individual conductors in the low-voltage windings.

The final design is one which uses a sheet of copper across the width of the low-voltage coil so that one turn becomes one layer. The thickness of the sheet is varied to give the required sectional areas (see photo lower left).

Westinghouse engineers, in collaboration with Revere and other suppliers, wrestled with the problem of securing a satisfactory sheet material for this purpose for over a year. The layer insulation was designed to be sufficient for turn-to-turn insulation; this eliminated, from an electrical standpoint, the need for insulated sheet copper. However, this method presented still another problem. For, to accomplish this, the copper sheet had to be sufficiently burr free to permit the use of a single sheet of thin layer insulation. The answer to this problem was the development of a smooth Revere Rolled Copper sheet, which contributed to giving the new Westinghouse sheet-wound copper design transformer the following outstanding advantages:

1. A compact coil of great inherent mechanical strength against short circuit forces.

2. Reduction in losses and impedance by reducing the high-low space to a minimum.

3. Weight reduction directly through reduced mean turn and indirectly by eliminating coil bracing.

4. More effective cooling obtained by removing coil blocks and braces.

5. Total lower weight of unit which permitted extension of pole mountings to ratings which were previously available only in the substation type.

Find out today how Revere Rolled Copper can be used to advantage in your coil winding application.

REVERE

COPPER AND BRASS INCORPORATED

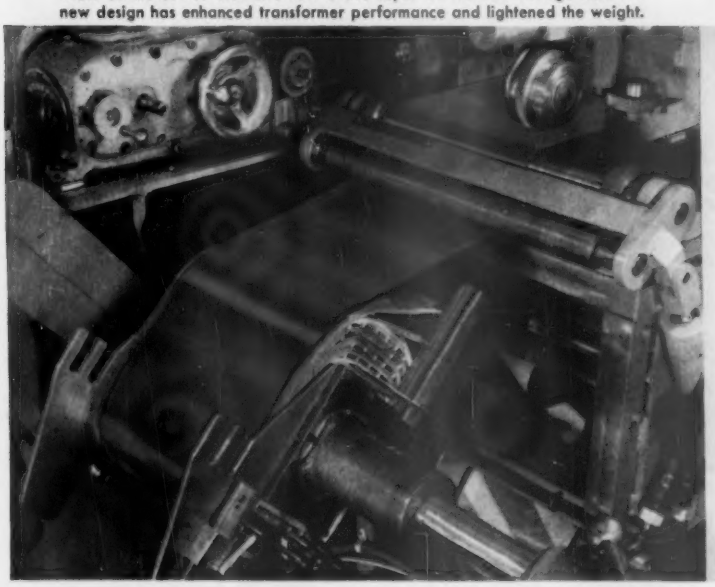
Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

Sales Offices in Principal Cities. Mills: Rome, N. Y.; Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles, Riverside and Santa Ana, Calif.; New Bedford and Plymouth, Mass.; Brooklyn, N. Y.; Newport, Ark.; Ft. Calhoun, Neb.

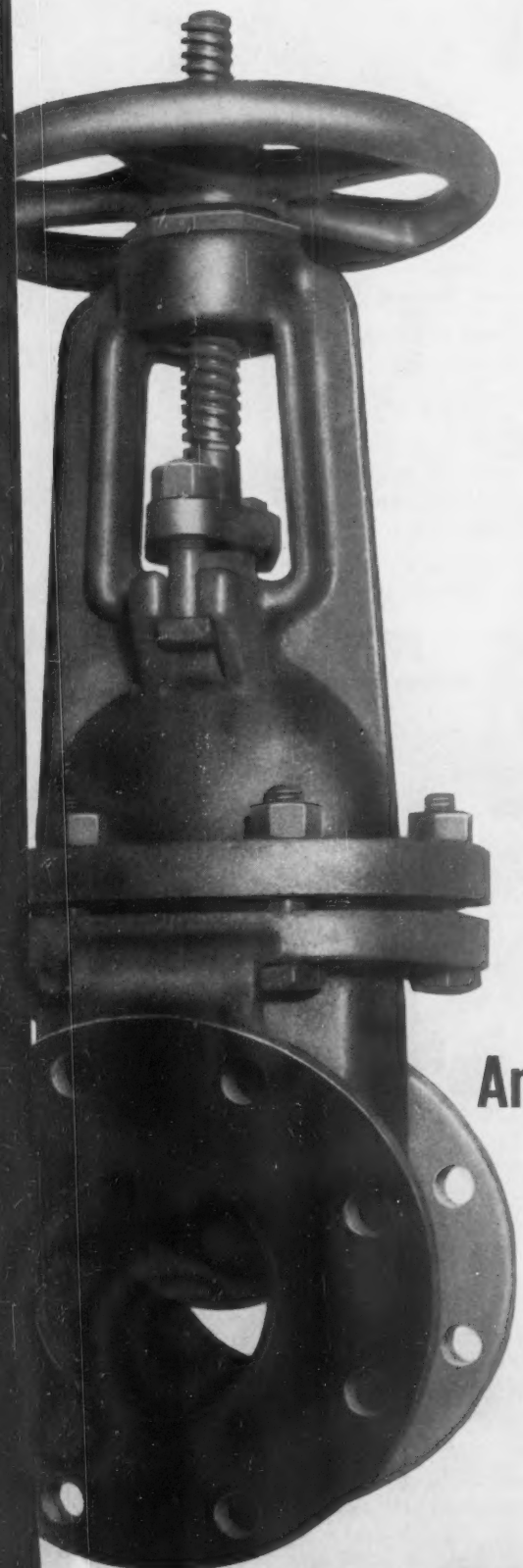
Distributors Everywhere.

PACE-SETTING sheet-wound coil design uses a sheet of copper across the width of the coil so that one turn is one layer of the Low-voltage coil. The new design has enhanced transformer performance and lightened the weight.



ONE OF THE WESTINGHOUSE transformers—a 500 Kva, 7200 Volt rating—incorporating the new design. Previously available only in the substation type.





ACE

HARD RUBBER-LINED GATE VALVES

FULL PROTECTION AT REASONABLE COST

Corrosive liquids never get near the metal in this long-wearing gate valve. All wetted parts are protected by Ace hard rubber, noted for enduring resistance to acids, bleaches, and a host of chemicals. Not just a thin coating, but a thick, homogeneous lining that's calendered layer over layer and applied with permanent bonding techniques to make weak spots impossible.

Precision-machined disc and seat remain drip-tight even after long use. Operation is smooth, low friction. (Wet hard rubber is an excellent bearing material.) Can be packed while open under full pressure. Rated 125 psi. Std. A.S.M.E. flanges. Stocked 2″ to 8″; larger sizes to 16″ on order.

Ask to see the Ace Gate Valve, and ask its price. It's economical enough to replace many special valves in your plant . . . and reliable enough to make high-priced alloy metal valves an unnecessary luxury. Write American Hard Rubber Company today.



Ask for helpful Piping Systems Data Bulletin CE-51/52

CHEMICAL EQUIPMENT DEPARTMENT ACE

American Hard Rubber Company

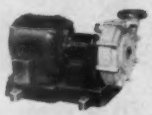
ACE ROAD, BUTLER, NEW JERSEY



Rubber-lined steel tanks and special equipment. Also custom compounds for field application **Bul. CE-53.**



Rubber-lined steel pipe . . . combines strength of steel with chemical resistance of Ace Hard Rubber. **Bul. CE-51/52.**

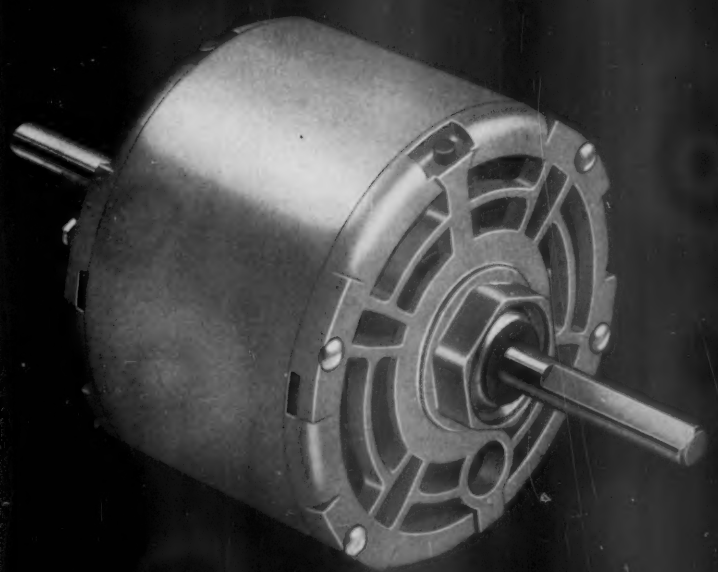


Acid pumps, centrifugal and gear types, protected by Ace Hard Rubber. Full line to 350 gpm. **Bul. CE-55.**

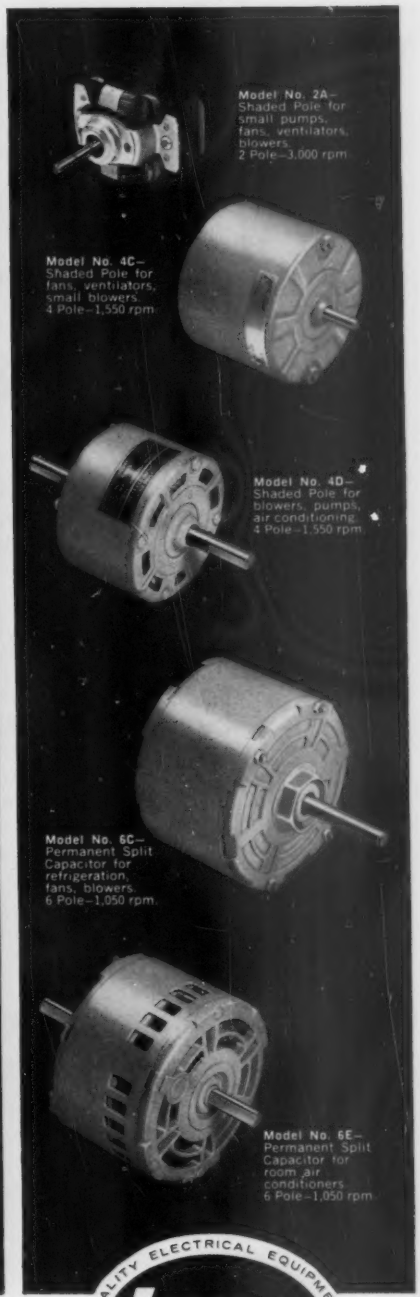


Hard Rubber pipe and fittings, including heat-resistant Tempron for handling hot corrosives. **Buls. CE-51/52 and 96.**

SPECIFY LEECE-NEVILLE MOTORS FOR QUALITY, RUGGED DESIGN, LONG LIFE



ECONOMY AND RUGGED STRENGTH—Model 6D Shaded Pole. 6 Pole—1050 rpm—1/12 to 1/4 hp. Quiet, smooth running power... ideal for air conditioning, refrigeration and heating service.



Model No. 2A—Shaded Pole for small pumps, fans, ventilators, blowers. 2 Pole—3,000 rpm.

Model No. 4C—Shaded Pole for fans, ventilators, small blowers. 4 Pole—1,550 rpm.

Model No. 4D—Shaded Pole for blowers, pumps, air conditioning. 4 Pole—1,550 rpm.

Model No. 6C—Permanent Split Capacitor for refrigeration, fans, blowers. 6 Pole—1,050 rpm.

Model No. 6E—Permanent Split Capacitor for room air conditioners. 6 Pole—1,050 rpm.

QUALITY ELECTRICAL EQUIPMENT

Leece-Neville

SINCE 1909

LEECE-NEVILLE now offers you a complete line of shaded pole and permanent split capacitor motors—basic units adapted to your specifications, or special motors custom engineered to your requirements—with horsepower ratings from 1/150 to 1/2 hp. All L-N motors are capable of meeting U.L. and C.S.A. application tests. Leece-Neville has more than 50 years of experience manufacturing motors and other electrical equipment, and modern facilities assure not only top quality, but also delivery to your schedules and lead times. For full information, just mail the coupon at right.

The Leece-Neville Company, Dept. P-4
Georgia Division, Gainesville, Georgia

Please forward details on your shaded pole and permanent split capacitor motors.

*Name*_____ *Title*_____

*Company*_____

*Address*_____

*City*_____ *Zone*___ *State*_____

*Type of product*_____

For More Facts About Ad ←on Facing Page Write in No. 232

For More Facts Write No. 233 on Information Card—Page 32

Planned Lighting Improves Work Performance

GOOD LIGHTING is never a luxury—it is a vitally necessary investment. If lighting conditions are inadequate to the needs of the people working in an office, the quality and quantity of their work will suffer.

Experience has shown that casual and traditional concepts of lighting design cannot be relied upon to provide good lighting for an office. However, planned lighting takes into consideration all the aspects of the lighting system, many of which might otherwise be neglected or overlooked.

Planned lighting is concerned with the type of work being performed, furniture and equipment finishes, elimination of glare, space proportions, visual comfort, cost factors, and overall appearance.

In modern office operations, use of the eyes ranges from work involving fine details over a long period of time—such as drafting and accounting—to jobs that call for only casual vision—as in reception areas and inactive file rooms.

Thus the amount of light provided for an office area should be measured with regard to the type of work and the time required for its performance. The footcandle is the standard unit of measurement of light.

Indirect lighting is one of the best and most widely used systems for offices. It directs most of the light (90 to 100%) toward the ceiling and upper walls from where it is reflected throughout the room. It is necessary, of course, that the ceiling and walls be of a light finish in order to provide sufficient reflection.

Indirect lighting can generally be used more efficiently in large offices since the ceilings of these offices provide a greater reflection area. The advantage here is that the ceiling brightness usually is not within the field of vision.

Direct lighting systems, in which most of the light is directed downward, provide more efficient use of light than do indirect systems. This type of lighting, however, causes shadows and glare. But proper spacing of fixtures and the use of light finishes on room and wood furniture surfaces will do a great deal to correct these difficulties.

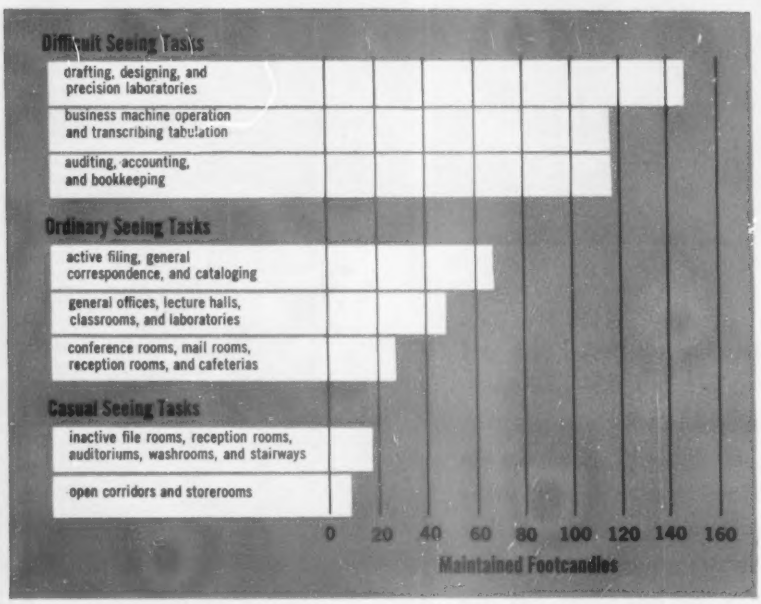
Some glass desk tops produce even more objectionable glare. The tough finishes of many modern wood desks do not need the protection of glass, which can be eliminated in many cases.

In a semi-indirect system, 60 to 90% of the light is directed upward and the rest is directed downward. With this method, as in indirect lighting, the ceiling becomes, in effect, the main source of light. Semi-direct systems are just the opposite, with most of the light going downward toward the work.

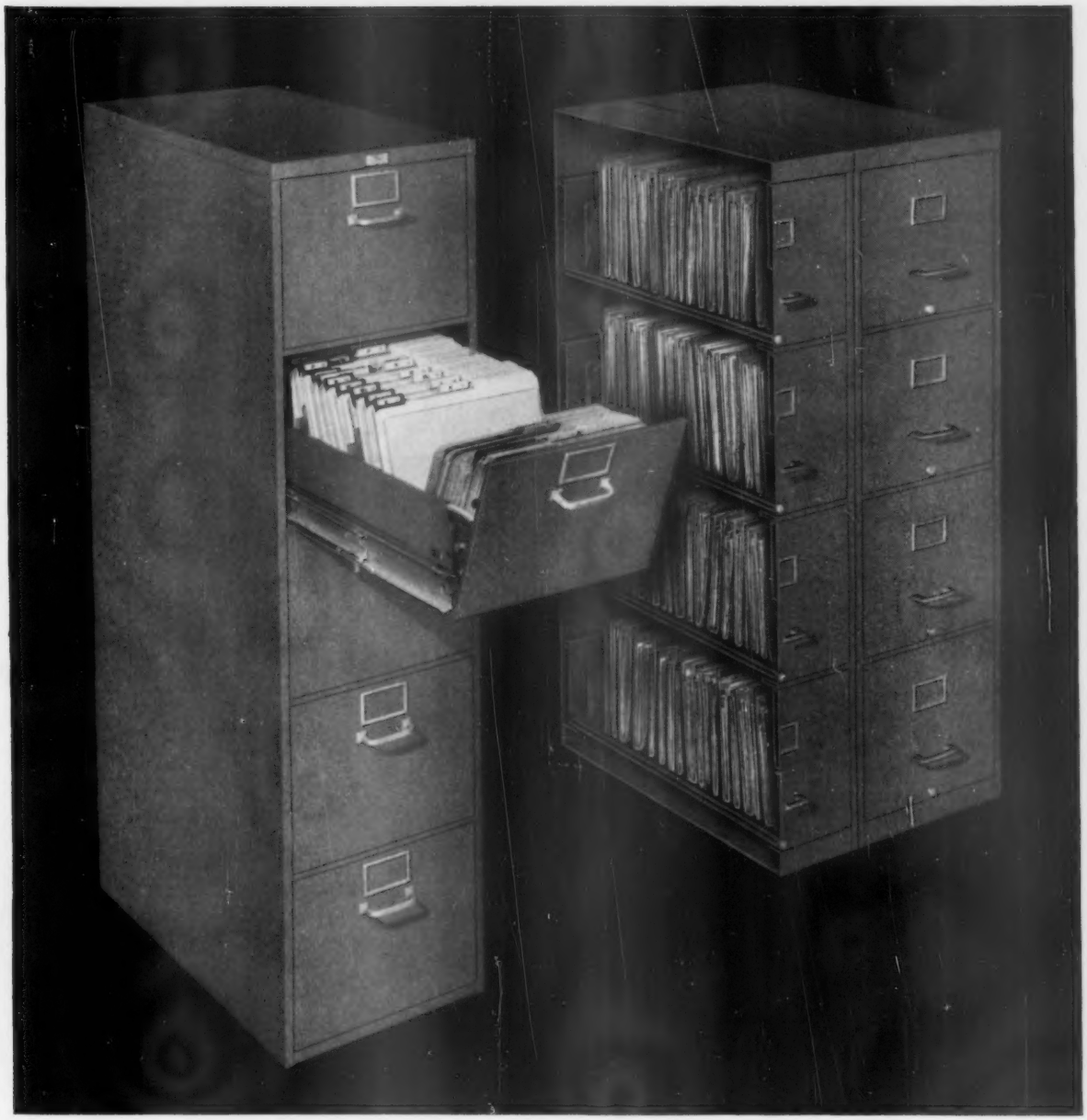
General diffuse lighting fixtures distribute light about equally upward and downward. This system has a disadvantage, however, in that it tends to make shadows more noticeable and often presents difficulties with direct and reflected glare.

A well-planned office leaves as little as possible to chance. Certainly with a factor as essential to work performance and efficiency as lighting, P.A.'s should carefully study all possibilities.

Recommended Foot Candles for Various Tasks



When lighting has been properly planned in advance, areas where difficult seeing tasks are performed will be subjected to more light than areas where casual jobs are done.



One equals one-and-a-half

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For More Facts Write No. 235 on Information Card—Page 32

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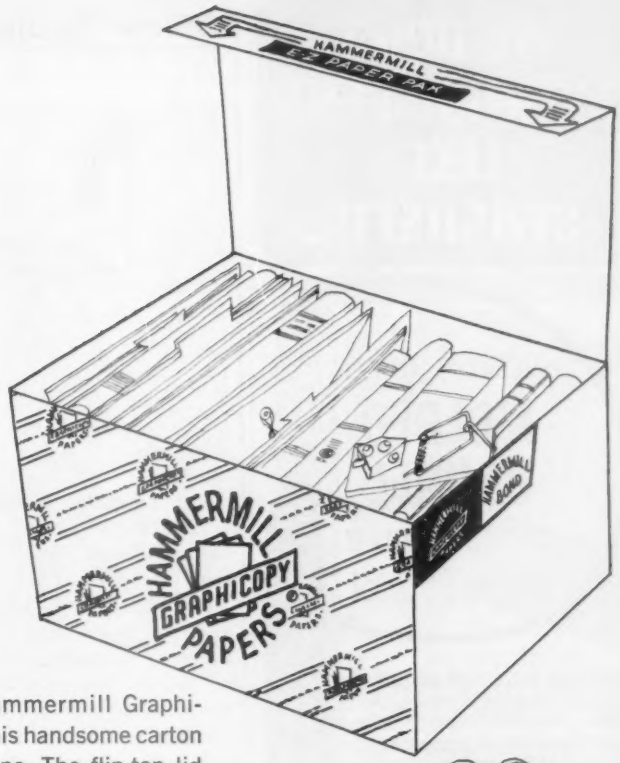
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STORAGE? Many Hammermill Graphicopy customers use this handsome carton after the paper is gone. The flip-top lid opens easily, closes snugly, keeps out dust, protects contents from damage.



DELIVERIES? Use a sturdy Hammermill Graphicopy carton to deliver the pieces your office prints on fast-running Graphicopy Papers. Ask your Hammermill man for Graphicopy cartons, full ones.



FILE? The carton makes an excellent file. It's just the right size to take most file folders, many other office odds and ends. Meanwhile, don't overlook the best reason for collecting these cartons—the cut-size Graphicopy Paper inside.

THE BIG REASON for collecting Graphicopy cartons is inside—Hammermill Graphicopy Papers. These 8½ x 11 and 8½ x 14 and larger papers are made for printing, duplicating and office use. They're made right to run right on your equipment. Ask your nearby Hammermill supplier to introduce you to Graphicopy Papers. Hammermill Paper Company, Erie 6, Pennsylvania.

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WE DON'T EXTRUDE PENS LIKE SPAGHETTI...

Because only a **MOLDED BARREL** can give you a "Finger-fit" Grip!



ENGINEERED FOR BETTER WRITING, the new Eagle STICKPEN lets you write longer . . . more comfortably . . . without finger fatigue. Extruded competitive barrels are one shape from end to end, but Eagle's molded barrel is beautifully sculptured at the finger grip to a scientific shape that fits your hand. Made of high-impact, odorless Forticel, it will never shatter, crack, warp, craze, or change color. Your new Eagle STICKPEN will stand more abuse, and it looks more expensive than ordinary office pens!

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Office Equipment

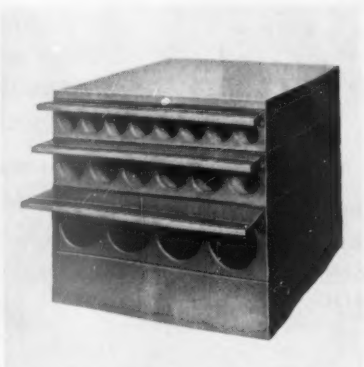


An all-purpose **stacking chair** was recently placed on the market by **Royal Metal Manufacturing Co., One Park Ave., New York 16, N. Y.** It has the appearance of wood and is actually a built-up laminate of many layers of plastic impregnated wood. Its outstanding features include a resistance to damage by burn, alcohol, mild acids, alkali and weather.

Write No. 37 on Information Card—Page 32

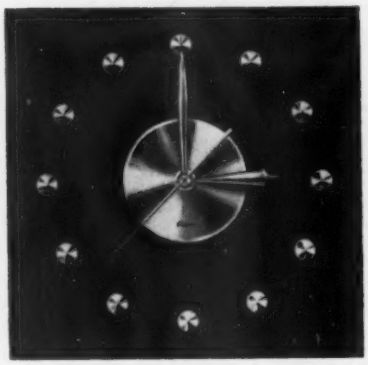
A twelve page **brochure** which discusses time and cost savings for order-invoicing is available from **Ozalid division of General Aniline & Film Corporation, Johnson City, New York.** The new publication is entitled "From Order to Invoice . . . Written Just Once."

Write No. 38 on Information Card—Page 32



Rolled tracings, prints and other rolled materials can be easily filed in the new **filing equipment** introduced by **Hamilton Manufacturing Company, Two Rivers, Wisc.** The modular files come in four, six, and eight tube units with 4", 2⅝", and 1⅞" diameter tubes. Each tube is constructed of paper laminate, foil-wrapped with steel ends and anchored mechanically in a metal frame. The hinged door is held in open or closed position by spring tension without latches.

Write No. 39 on Information Card—Page 32



Built-in electric **wall clock** has been introduced by the **Sessions Clock Company, 65 East Main Street, Forestville, Conn.** It fits into a standard 4" octagonal electric junction box. The hour markers, hands and center disc are available in bright brass, antique black and spray gold. The hour markers can be arranged in round, square or rectangular design in 8", 10" or 12" diameters.

Write No. 40 on Information Card—Page 32



Typewriter pads made of a resilient composition have been introduced by **Enor Corporation, 55 Woodbine Street, Bergenfield, N. J.** Microscopic suction cups are molded into the surface of the pad and produce frictional qual-

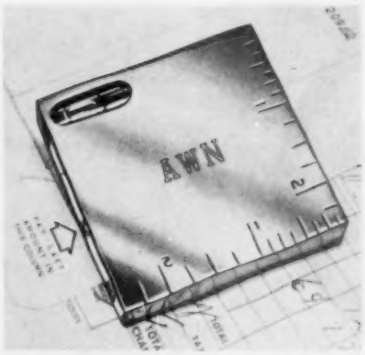
ities that prevent typewriter slipping. The new pad is also sound resistant and helps to eliminate vibration.

Write No. 41 on Information Card—Page 32



Four office equipment **stands** have been introduced by **Luxco, Inc., LaCrosse, Wisconsin.** Some of the features of the new stands include unitized tubular steel and die-drawn construction, large rubber casters, full-length piano hinges and spring-loaded support arms. The stands are offered in a variety of colors.

Write No. 42 on Information Card—Page 32



A **paperweight** of solid brass with a bubble-type leveler and a 2¼" ruler was recently introduced by **Oxboro Heath Company, P. O. Box 7031, Highland Station, Minneapolis 11, Minn.** The new desk accessory can be personalized with 2 or 3 initials.

Write No. 43 on Information Card—Page 32

New **typewriter paper ribbon** made of DuPont polyester film (Mylar) was recently placed on the market by **Peerless Roll Leaf, division of Howe Sound Co., 4511-23 New York Ave., Union City, N. J.** This plastic tape follows the outlines of the type face which never touches the coating, since it is only on the "paper-side." The impression made on the paper is so hard that it will not smear or rub off when touched. The tape comes in standard rolls which are 1200 feet long, 5/16 inches wide, and has a four-inch outside diameter.

Write No. 44 on Information Card—Page 32



A portable **adding machine** was recently introduced by **American Office Equipment Co., 24 East 21st Street, New York, N.Y.** The machine has a full keyboard, direct subtraction and a repeat key for multiple additions.

Write No. 45 on Information Card—Page 32



Basic elements of a new **file system** are unit boxes and a free-standing metal frame, products of **Tab Products Co., 995 Market St., San Francisco, Calif.** The boxes are made of laminated fiberboard in either letter or legal size. The new "Spacefinder Files" are available in gray, desert tan, and mist green.

Write No. 46 on Information Card—Page 32

FREE EAGLE STICKPEN



included in

FREE SCIENTIFIC WRITING TEST KIT!

Purchasing agents who've used this kit acclaim it "The most practical measure of ball pen performance ever devised!"

Get the actual handwriting test that every Eagle STICKPEN must pass after it has successfully passed 10 other rigid "Quality Control" tests! Specially devised by Eagle laboratory technicians, this scientific writing test shows up even the slightest imperfection of any ball pen . . . under actual writing conditions! No buying executive responsible for supplying his personnel with good office pens can afford to be without this instructive test-kit!

GET YOUR SCIENTIFIC WRITING TEST KIT... NOW...FREE! Compare in your own hand, the Free Eagle STICKPEN against any other ball pen—using your own individual writing method and style!

FILL OUT AND MAIL THIS COUPON!

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Without obligation, please send me the new Eagle STICKPEN included in the FREE WRITING TEST KIT that shows up even the slightest imperfections of any ball pen, under actual writing conditions!

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Title_____

Company_____

Address_____

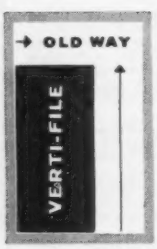
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For More Facts Write No. 238 on Information Card—Page 32





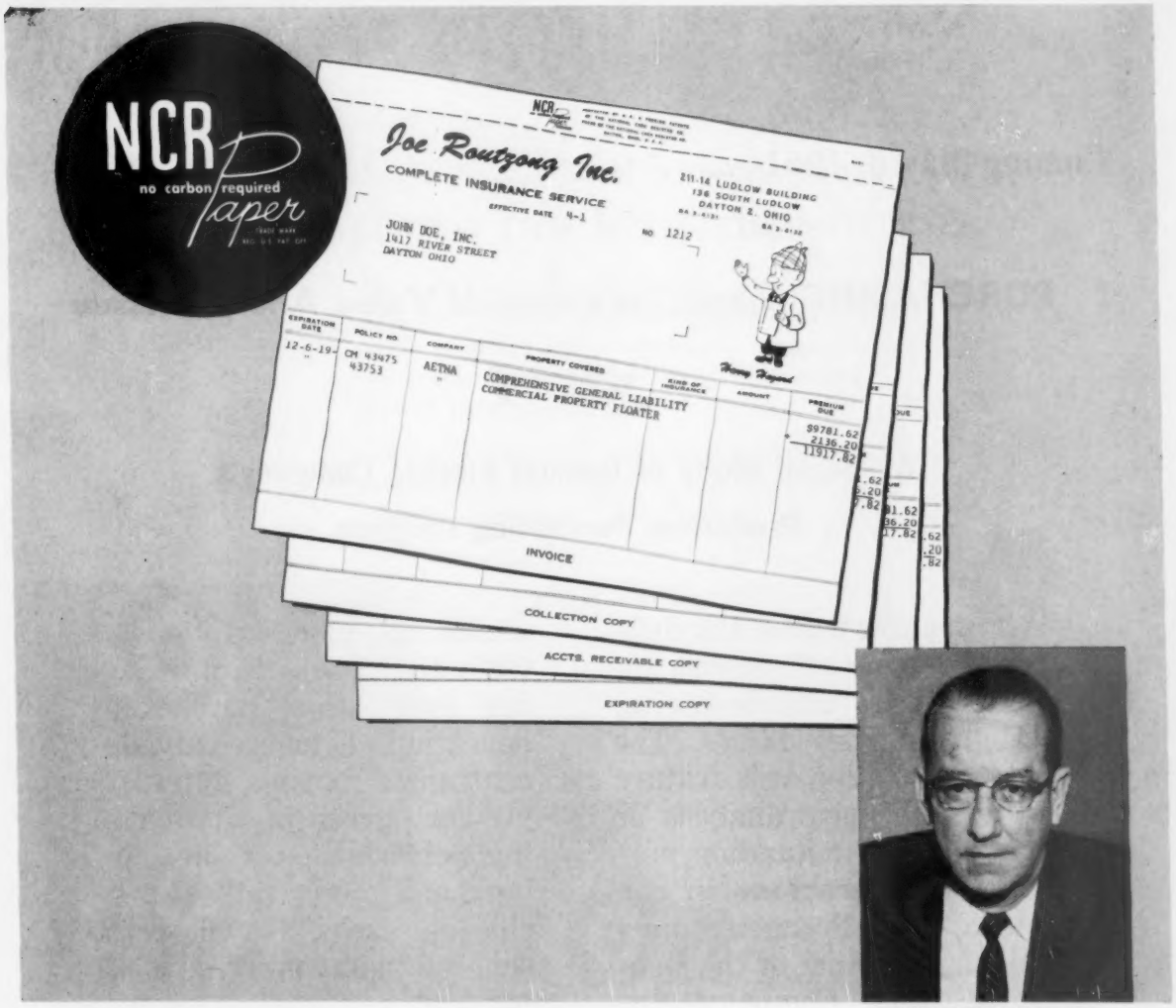
A Verti-File system will save you up to 58% in floor space! Start planning now!

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Heavy, space-hungry file drawers are old-fashioned because Verti-File gives you a new kind of efficiency. Easy access saves filing and finding time. Compactness saves steps. What's more, Verti-File gives you twice the filing capacity in half the floor space. Economy—plus! Valuable papers can be securely locked away behind silent, sliding steel doors. Convenient posting tray saves time. Find out for yourself! Try a side-by-side demonstration with your present system. Just switch folders from old to new. You'll see for yourself the extra filing space and ease of access. Handsome, baked enamel finish gives Verti-File the same top quality appearance as your finest office furniture. Let Verti-File start saving time, steps and money for you and your employees right now. Write today for complete information and name of your nearest dealer. DeLuxe Metal Products Division, Royal Metal Manufacturing Company, Dept. 10-D, One Park Ave., New York 16, N. Y.

Royal DELUXE DIVISION

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"We process more forms in less time because we do not have to insert or remove carbons. NCR Paper makes it possible for us to pick up originals and copies as a complete unit.

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A Special Study of General Electric Company's Productive Purchasing Program

Within a few weeks, Purchasing Magazine will publish another of its trend-setting Value Analysis Issues. The May 8th edition will feature a comprehensive analysis of one of the outstanding purchasing operations in the country—the Productive Purchasing Program of the General Electric Company. Included will be descriptions of GE's approaches to purchasing automation, purchasing education, centralized and decentralized buying, forecasting for purchasing, purchasing performance, value buying, and many other purchasing areas. It will be a source of many practical ideas for you.

In addition . . . this issue will include over

300 actual case histories of audited savings classified for easy reference into 9 product categories: Production Tools, Component Parts, Materials, Electrical Equipment, Packaging and Shipping, Materials Handling, Power Transmission, M.R.O. and Safety Supplies and Office Supplies.

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PLANTS COAST TO COAST

Pittsburgh P.A.'s Hear Salesmen Discuss Purchasing



William G. Blessing, Blaw-Knox Co., professional development chairman, opens the well-attended forum meeting.



Andrew M. Kennedy, Westinghouse Electric Corp., first V.P. of the Pittsburgh association, talks to Dr. Jan Karski (r.), main speaker at a recent meeting of the group.



Cha ting over their coffee are Richard D. Averell, Gulf Oil Co., (l.) Pittsburgh association president, and Wayne Rawley, Jr., Blaw-Knox Co., secretary.

IN SPITE of flood threats from ice-packed rivers, Pittsburgh purchasing agents turned out in record numbers to hear three sales executives give their views of purchasing. The recent forum meeting of the Pittsburgh Purchasing Agents Association, "Putting the Mirror in Your Hands," was arranged by Chairman William G. Blessing, Blaw-Knox Co. Speakers were Arthur St. Clair, Fanning Manufacturing Co.; George J. Fisher, B. F. Goodrich Co.; and Keith P. Rindfleisch, U. S. Steel Corp.

Suggesting that buyers and sellers should "level" with one another, Rindfleisch said: "We like purchasing executives to be frank. Perhaps you feel certain salesmen do not deserve your business for one reason or another. Whatever the reason, we like it when you are forthright and honest. Too often we are given excuses rather than fact."

At the dinner session, more than 220 purchasing agents heard Dr. Jan Karski, associate professor of government at Georgetown University, discuss the "Soviet Economic Offensive." Dr. Karski compared U. S. and Soviet outlays for foreign aid and military assistance and discussed the economic and psychological results of these expenditures in relation to American business. A member of the Polish foreign service prior to World War II and a Soviet expert, he suggested that the free world economy could not have survived without aid from the United States.

For More Facts About Ad on Facing Page Write in No. 241→


where moisture
and abrasion
meet brightness
that never wears out
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Superior
STAINLESS STRIP STEEL
At the toughest spot in the kitchen, Superior Stainless shows its metal best . . . the ever-bright, smooth gleam that asks no more than a wipe to reflect a housewife's pride. • Solid Superior stainless sink frames fabricate uniformly well because composition, dimensions and temper are uniformly as specified, every time. • We can serve you exactly as you wish. Ask us!
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Stainless Steel

EXIDE POWER PACKAGE

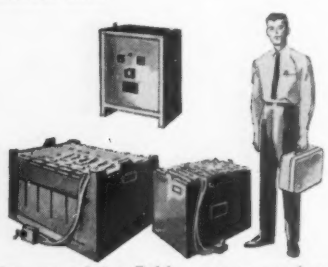
Exide Industrial Marketing Division, The Electric Storage Battery Company, Philadelphia 20, Pa. (ESB)



A well-matched pair. Operator connects Exide truck battery to Exide ETR rectifier type charger, especially selected to charge the battery fully within the allotted time.

WHY A BATTERY AND CHARGER SHOULD BE MATCHED

The big reason is economy. In electric truck service, a fully charged battery means your truck can do more work. So you get more done for each dollar of cost. Furthermore, if you don't charge your battery fully each time, you could be shortening its life. And that would add to your cost too. For maximum economy, it is important that your charger have adequate capacity to charge your battery fully, safely and within the allotted time.



The complete Exide power package. Three basic battery types, four charger types, both in complete range of capacities, plus Exide service—all from one dependable source.

Make sure, however, that your charger is not oversized. You only need enough charger capacity to do the job. Any more is wasted. Excess capacity simply represents an overexpenditure of money for your electric power.

Obviously, specifying the battery and charger you need for your own power requirements is an engineering problem. And Exide men approach it on an engineering basis. The objective is to give you the right power package for maximum economy.

The first step in economy is to select the right type and size battery for your truck. This can best be done from a broad battery line. And Exide offers the broadest line of industrial truck batteries on the market, including Exide-Ironclad with tubular positive plate construction; Exide-Powerclad premium flat plate; and the improved Exide nickel-iron-alkaline (invented by Thomas A. Edison). There's a type and size for every truck application.

Second, your Exide man recommends the correct type and size of charger for your particular battery, based upon your plant conditions. Here he can choose from the four basic industrial truck battery charger types in the Exide line: the vertical motor generator type which saves floor space and initial cost; the new ETR rectifier with low maintenance requirements and longer life; the type PMR rectifier for economy and convenience; and the horizontal motor generator with a long record of dependability, safety and life.

For both batteries and chargers, Exide offers complete service to insure that you get maximum battery and charger life.

Only Exide offers this complete power package—your key to the lowest-cost electric truck power you could buy. Write for complete details. Exide Industrial Marketing Division, The Electric Storage Battery Company, Philadelphia 20, Pa.

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CURE: AMERICAN AIRLINES TRUCK-AIR SERVICE

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Service like this is only one of the reasons why more people ship American than any other airline. American's fleet of DC-7 AIRfreighters, jets and other combination planes carries more freight than any other airline. And the world's most experienced AIRfreight specialists guarantee your shipment will have expert handling. *Ship with the professionals*—call American AIRfreight.

AMERICAN AIRLINES

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For More Facts Write No. 243 on Information Card—Page 32

Alabama Buyer-Seller Dinner Draws 900

THE RECENT Fourteenth Annual Buyer-Seller Dinner, sponsored by the Purchasing Agents Association of Alabama, proved to be an outstanding success. More than 900 members and guests attended the special event which was under the general chairmanship of George L. Wilson, purchasing agent of Jefferson County Commission.

Principal speaker at the dinner was W. Cooper Green, executive vice president of Alabama Power Company. Mr. Green, a native of Birmingham, based his remarks on the industrial and economic progress of the South. The title of his talk was "We are Marching Forward."

Among the array of important personalities introduced by James B. Harrington, Nifty Manufacturing Co., president of Alabama Association, was Cloice E. Temple, Allis Chalmers Mfg. Co. and District 7 V.P. of the N.A.P.A.



Posing for the camera before dinner were (l. to r.): Bob Black, Elmo Neely, and Al Bresler.



Alabama Association member F. W. Mead (l.) chats with his guest, Bill Proctor.



The City Paper Co. was well represented at the dinner by Jim Guyton (l.) and Paul Friedman.

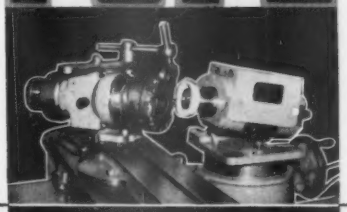


Principal speaker at the Alabama Buyer-Seller Dinner was W. Cooper Green (c.). Shown with him (l. to r.) are: Shelley Matthew, Quin Cather, Clyde Porter and General Chairman George Wilson.

For Profitable Production of Accurate Parts

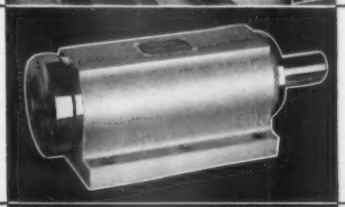
specify **POPE** PRECISION **SPINDLES**

GRINDING



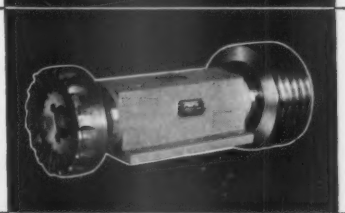
pictured is Pope P-6651-B Motorized Super-Precision Tilting Head for No. 2 Cincinnati Tool and Cutter Grinders. It is but one of hundreds of different Pope Grinding Spindles — motorized, belt driven, external, internal, deep hole, etc.

BORING



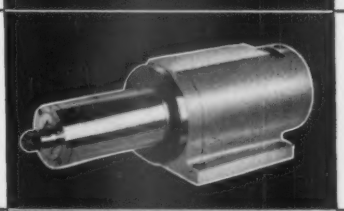
shown is Pope P-18501B Heavy Duty, Flange Nose, Belt Driven Precision Spindle for large deep hole boring and facing tools. Others include multi-spindle boring heads, motorized and motorized-belt driven high speed heads and super-precision heads for boring holes round.

MILLING



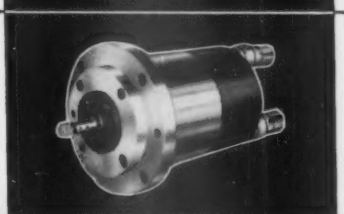
this Pope P-12007-M50 Heavy Duty, Belt Driven Spindle is available in sizes from 1 to 50 HP with standard No. 10, 20, 34, 40, 50 or 60 milling machine noses. (Ask for Bulletin S-17.) Other milling spindles include motor driven, gear hobbing, tracing attachment, right angle and offset types.

GRINDING MILLING DRILLING CUTTING



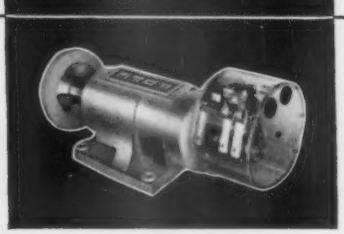
this Pope P-1029-AU Motorized, Heavy Duty Spindle is available from 900 to 3600 RPM and up to 20 HP. Shaft can be arranged to hold grinding wheels, milling cutters, drills or other cutting tools. Quick-change collet chucks are used for drilling, universal collet chucks for end milling.

HIGH FREQUENCY



this Pope P-940 Motorized, Water Cooled, Oil Mist Lubricated, Grinding Spindle runs at 100,000 RPM, features *low maintenance cost.* Other heavy duty, high cycle Spindles at lower speeds are available for milling and other operations, and for mounting in a horizontal or vertical position.

ANOCUT ELECTROLYTIC GRINDING



this Pope P-19162-AN Spindle has built-in insulation and rugged fork type cool operating brush assembly for transmitting low voltage high amperage current to wheel. Others include belt driven types and are arranged to operate from 50 to 3000 amps.

One of the 20,000 different Pope Spindles may be just the one you need. May we have your specifications?

No. 133A

POPE®

ENGINEERS, DESIGNS AND BUILDS PRECISION ANTI-FRICTION BEARING SPINDLES FOR EVERY PURPOSE

POPE MACHINERY CORPORATION • 261 RIVER STREET • HAVERHILL, MASS.

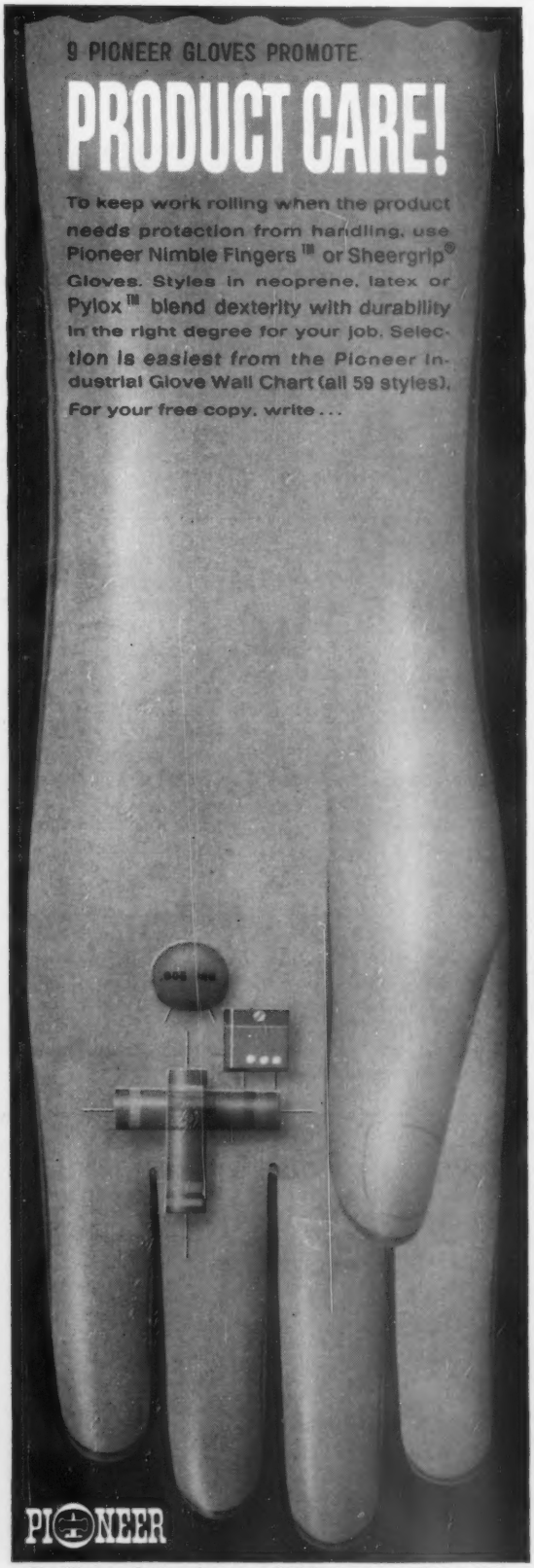
Established 1920

For More Facts Write No. 244 on Information Card—Page 32

9 PIONEER GLOVES PROMOTE

PRODUCT CARE!

To keep work rolling when the product needs protection from handling, use Pioneer Nimble Fingers™ or Sheergrip® Gloves. Styles in neoprene, latex or Pylox™ blend dexterity with durability in the right degree for your job. Selection is easiest from the Pioneer Industrial Glove Wall Chart (all 59 styles). For your free copy, write . . .



PIONEER

The Pioneer Rubber Company, 233 Tiffin Road, Willard, Ohio

For More Facts Write No. 245 on Information Card—Page 32

26 PIONEER GLOVES COMBAT

ABRASION!

All 59 Pioneer Glove styles are job-smart; like Neoprene Coated "Pacemakers" and Pylox Coated "Stanflex". . . built to give you better output with more work-hours per glove and more comfort-hours per worker. There are 26 different Pioneer styles especially for abrasion protection on heavy rough materials-handling jobs. Pioneer has the right glove for the job. You can easily select the right Pioneer glove for your job by sending for the Foolproof Pioneer Glove Selector . . . it's free . . . and easy!



PIONEER

The Pioneer Rubber Company, 233 Tiffin Road, Willard, Ohio

For More Facts Write No. 246 on Information Card—Page 32

21 PIONEER GLOVES COMBAT

CHEMICALS!

There's a Pioneer glove to protect workers from chemicals, chemical burns or hand dermatitis. Of the 59 Pioneer Glove styles, 21 are designed to give long service in at least 103 basic oils, greases, acids, solvents and other chemicals. This includes all of the long-wearing *Milled Neoprene Pioneer* styles that bear this recognized Pioneer trademark.

STANZOIL PIONEER



PIONEER

The Pioneer Rubber Company, 233 Tiffin Road, Willard, Ohio

For More Facts Write No. 247 on Information Card—Page 32

5 PIONEER GLOVES COMBAT FATIGUE,

HEAT, COLD!

When the worker calls for hand comfort, you call for one of the 5 Pioneer lined, liquidproof glove styles. They're lined against temperature extremes and coated with *neoprene or* Pylox™ against liquid penetration. See these and 54 other glove styles in your free copy of the Pioneer Industrial Glove Catalog. For your free copy write . . .



PIONEER

The Pioneer Rubber Company, 233 Tiffin Road, Willard, Ohio

For More Facts Write No. 248 on Information Card—Page 32

"Call FOSTER for Rail"...Get Relayers PLUS



Installing or expanding in-plant trackage? Foster will deliver Quality Relaying Rail at lower cost . . . "plus" all necessary new track accessories, switch material—even the track tools to do the job. To help select the materials best suited to your job, call the Foster Track Specialist.

You will save on freight from Foster's nationwide warehouses, all of which stock all sections of relaying rail "plus" new rail for crane runways and specialized applications.

Another "plus": Foster's Track Inspection Kit, which illustrates all the elements needed for an efficient industrial siding. It's a real help for proper track maintenance.

Write L. B. FOSTER CO. for free Track Kit PA-4
Pittsburgh 30, New York 7, Chicago 4, Houston 2, Los Angeles 5, Atlanta 8, Cleveland 35.



Faster From Foster

Pipe • Rental Steel-Sheet Piling • Pipe Pile • Rail

For More Facts Write No. 249 on Information Card—Page 32

Association News

Howard Ahl Speaks to Detroit Association



G. W. Howard Ahl (left), executive secretary-treasurer of the National Association of Purchasing Agents was guest speaker at a recent meeting of the Purchasing Agents Association of Detroit. William Starret, General Motors Technical Center, first vice president of the Detroit Association, presented Mr. Ahl with a memento of his visit to the "motor city."

8th District Planning For Fall Conference

Members of the 8th District of the National Association of Purchasing Agents can be assured that nothing will be overlooked to make their fall conference a success. Preliminary plans are now well underway.



Rube Atkins

The three-day conference is scheduled for the Essex House Hotel, Newark, New Jersey on

(*Please turn to page* 156)



This 35,000-pound giant is shown handling huge aluminum billets—four at a time.



The new "Acro-Smooth" the most modern, most efficient fork truck you can buy.

An *ELPAR* fork truck for every handling job

1 to 20 tons capacity—with more than 40 standard models

Cut your truck operating costs with ELPAR fork trucks. Built to match the finest equipment in your shop, they need a minimum of maintenance and repair—even on the toughest jobs. And, they run on low-cost electric power.

There is a model for every handling task, and an experienced ELPAR representative to help you pick the best one for your plant.

WRITE FOR THIS CATALOG
Get complete details on all ELPAR fork truck models.



ELPAR
ELECTRIC TRUCKS

The Elwell-Parker Electric Company
4035 St. Clair Avenue
Cleveland 3, Ohio

In Canada: International Equipment Ltd.



This is ELPAR's smallest fork truck line, easily maneuvered in narrow aisles.



Handling coils of steel weighing up to 20,000 pounds is a typical job for the ELPAR Titan Series.



Here is a rugged truck for handling heavy loads—yet it's small, fast and highly maneuverable.





Two more extraordinary welding jobs done with M&T Murex Electrodes

THIS 6,588,000-LB. SHOVEL on the 50-yard line of a football field could dig a 65 cu. yd. dipperfull in one end zone, lift it 140 feet high, swing its 170-ft. boom and pile the 100 ton load atop a 12-story building in the opposite end zone.

THE TALLEST MAN-BUILT STRUCTURE, the new transmission tower for KFVS-TV, Cape Girardeau, Missouri has equally impressive statistics. It stretches 1676 feet skyward. Weighing 1000 tons, it has solid steel legs up to 7½" thick, can withstand over 100-mph winds.

Joint integrity is an absolute requirement for a shovel that chews up huge bites of earth...or a tower built to be buffeted by hurricane-force winds. Isn't it significant that welding on these giant jobs was done with M&T Murex electrodes? The electrode that's good enough to meet these requirements is certainly good enough for everyday jobs too.

Yet you get even more than a quality product with M&T Murex electrodes. You get reliable technical service from trained welding specialists. These men are well qualified to help you select the proper type from one of the broadest lines of electrodes—over 1000 types and sizes.

So call in the M&T man for details or recommendations. Or send for a copy of the Murex Electrode Selector.

M&T **welding products** · plating products
minerals · coatings · chemicals · detinning

METAL & THERMIT CORPORATION, General Offices: Rahway, New Jersey



TWICE as efficient
MORE economical
LESS maintenance

MARATHON TWIN TISSUE SERVICE

The Marathon Twin-Tissue Dispenser cuts washroom maintenance costs. The unique sliding-door feature means that a new roll is always handy—but not until the first roll is completely used. This reduces waste. No spare tissue is needed in the washroom. The Twin-Tissue Dispenser is theft-proof and simple to clean and maintain.

MARATHON QUALITY TISSUE

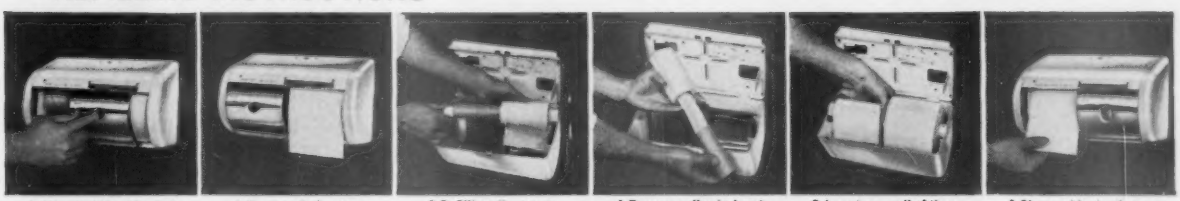


- Fully bleached
- Linenized embossed
- Extra soft
- Fast rate of absorbency



- Premium softness
- Pure white
- Sure-cut perforation
- Strong 2-ply tissue
- Instant absorbency
- Completely disposable

REFILLING INSTRUCTIONS



1 When last sheet is used, slide door to left.

2 Now ready for use.

3 Refilling dispenser—open cabinet and remove roller unit.

4 Reverse roller in hand and remove empty core.

5 Insert new roll of tissue on roller and replace in cabinet.

6 Close cabinet—tissue ready for use.

For industrial towels + tissue...

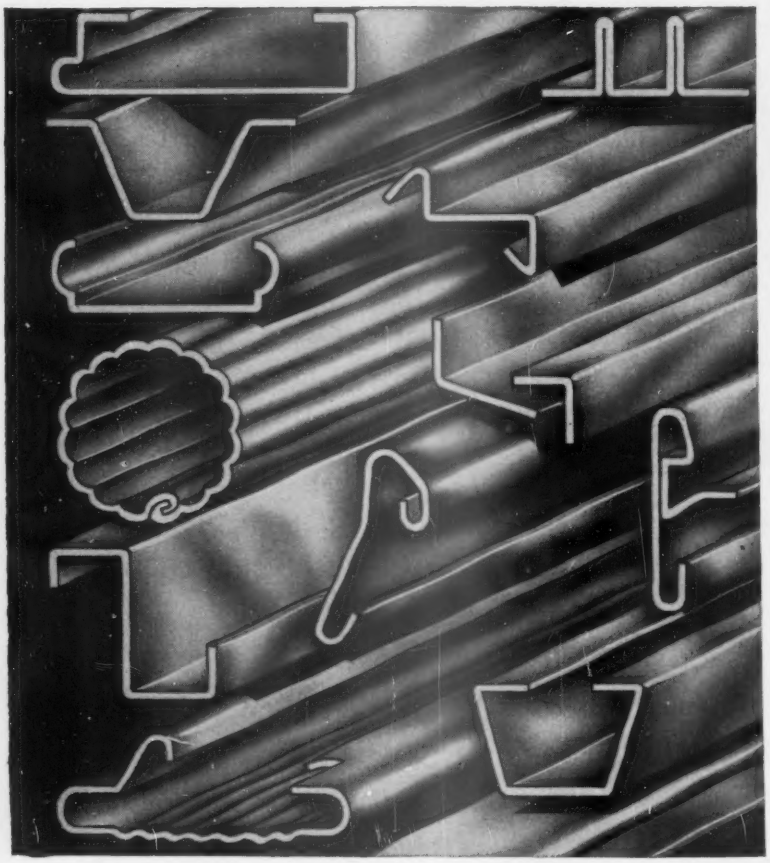
you can't beat marathon

A Division of American Can Company MENASHA, WISCONSIN

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For More Facts Write No. 252 on Information Card—Page 32

MONEY SAVERS...



• High-speed roll forming techniques which incorporate punching, notching, embossing or other secondary operations can drastically cut your metal shapes costs. The shape you need may already be in stock at Roll Formed. Check Roll Formed Bulletin 760 for existing shapes and see how Roll Formed's skills can help you cut costs and give you deliveries keyed to your production schedules.

SEE OUR CATALOG IN SWEET'S

ROLL FORMED PRODUCTS COMPANY

MAIN OFFICE AND PLANT, 3754 Oakwood Ave., Youngstown, Ohio

For More Facts Write No. 253 on Information Card—Page 32

Association News

(*Continued from page* 152)

October 25, 26 and 27. Theme of the program is "New Frontiers for Purchasing."

A product exhibit will be one of the features of the meeting. Selected companies will show the newest products and materials that are available.

Rube Atkins, Resistoflex Corporation, is general conference chairman.

Good Press Relations Important for Assns.

The importance of good publicity and public relations is well known to many of the local groups in the National Association of Purchasing Agents. They are now going after and securing publicity through their local press, radio, television, and regional purchasing publications.

This is true, however, only where the members of the local public relations and publicity committees have made a diligent effort and put forth the necessary energy to get results.

One of the main things to keep in mind is that N.A.P.A. is a worthwhile organization and that many activities are of interest to the general public. Members of local committees should endeavor to see that programs are arranged that will give an opportunity to present material to local press, radio, and TV of interest to the general public.

• *Information in this article was developed by C. C. Johnson, R. J. Reynolds Tobacco Co. Mr. Johnson is vice chairman of the National Committee on Public Relations, National Association of Purchasing Agents.*

Chairmen will have to make contacts with various media and take the time to work with and cultivate the editors of local papers and the managers of radio and TV stations. These fellows are always willing to listen, but it is important to remember that the material must be newsworthy.

In my travels around the country, I have had the privilege of talking with many editors of va-

(*Please turn to page* 158)


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INDUSTRIAL DISTRIBUTORS
THE RIGHT HAND OF PRODUCTION
JACOBS MANUFACTURING COMPANY • WEST HARTFORD, CONNECTICUT

Association News

(*Continued from page* 156)

rious association publications and have been amazed to learn that the main criticism they have is that not enough stories of interest are passed along to them.

I have also found that national publications, such as PURCHASING Magazine, have never failed to cooperate. They are always ready and willing to run stories of interest to purchasing agents and to devote space to happenings of interest in the local associations. **(Ed. Note:** Send all material to Association News Editor, Purchasing Magazine, 205 East 42nd Street, New York 17, N. Y.)

Another important function of the public relations committee—one that is not being followed as closely as it should—is keeping tab on just what is happening to individual members. Outstanding accomplishments, such as promotions, civic activities, and the like should be recognized and given proper treatment in local press and association publications.

Here is a wonderful opportunity to practice good public relations and at the same time get good publicity for the association and the purchasing profession.

An outline of how one association is handling publicity—and



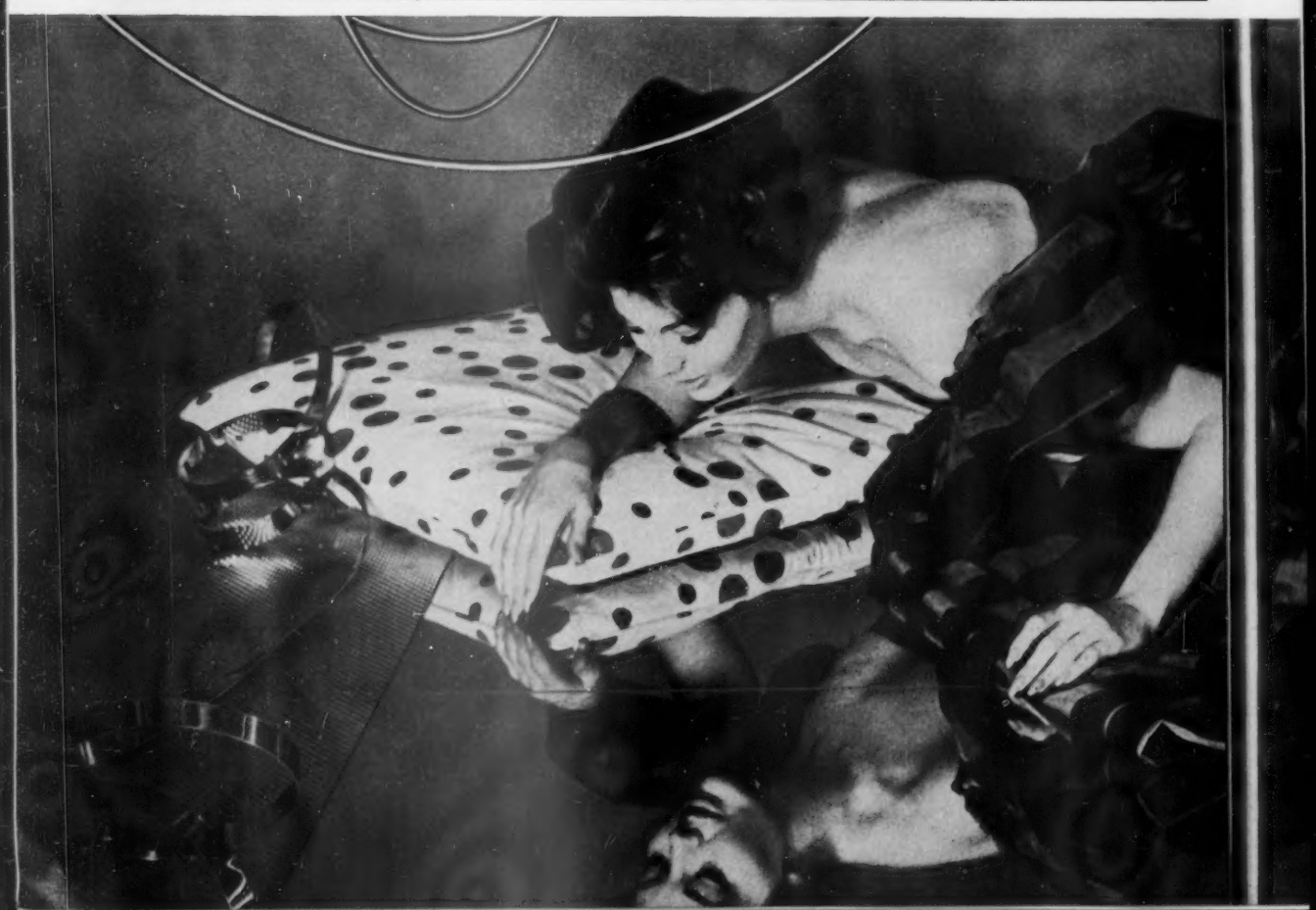
C. C. Johnson

with gratifying results—can be drawn from the Carolinas-Virginia Association.

In this Association, the chairman of the public relations and publicity committee is a member of the program committee and has an opportunity to work with it in arranging programs. Pre-meeting publicity is planned and sent to members in the large and small cities in a three-state area to be personally handled with the press, radio, and television. This system has resulted in the finest type of pre-meeting publicity, has increased attendance at meetings, and has secured new members for the Association.

Plans are made in advance for the newspapers, radio, and television in the cities in which quarterly meetings are held to obtain coverage while meetings are in session. The Association has been most successful, but it takes some work and time and the will not to give up too easily.

It has been a practice for some time to always extend an invitation to national publications to have editors and photographers cover meeting activities. In most cases these invitations are accepted, and in nearly all cases there is a representative from at least one publication at each meeting. This results in good publicity following the meeting.



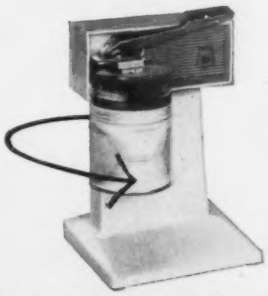
Association News

Dallas P.A.'s Give Scholarship Award



The Purchasing Agents Association of Dallas recently presented its annual scholarship award to Glynn Duff (c.), a student at Southern Methodist University. Robert D. Crane (l.), Dresser Industries, was chairman of the selection committee representing the Association. Dr. A. Baker, chairman of the department of management at S.M.U., was on hand to congratulate both the winner and the Association.

Silent nylon gears drive can opener



Custom molded by CMPC

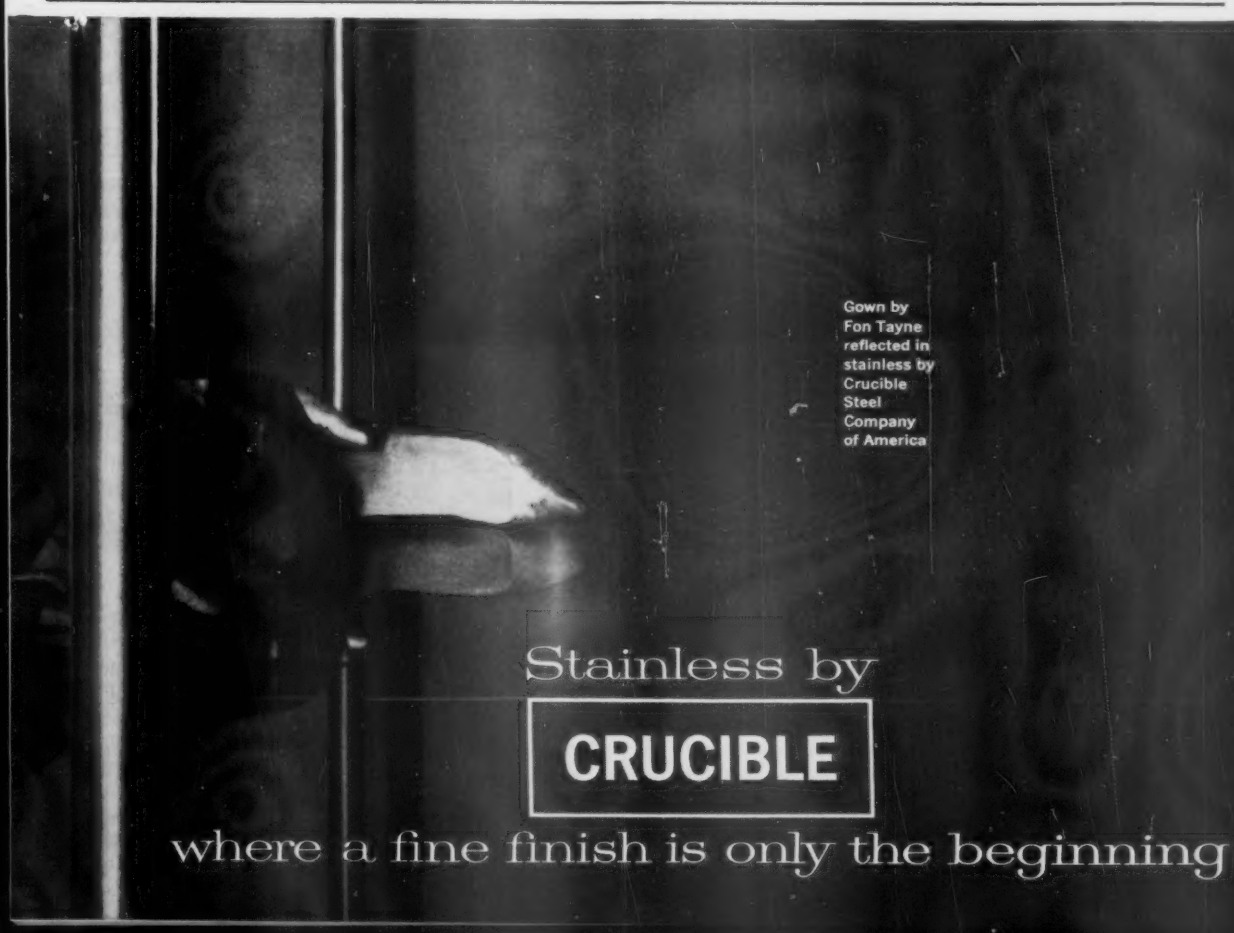
APPLICATION: Gear train and base for new Sunbeam electric can opener.

ADVANTAGES: Injection molded nylon gears deaden motor shaft sounds—operate smoothly and quietly. Nylon has high impact resistance and is self-lubricating. This permits high speed operation with little danger of heat build-up due to friction or lubricant failure. CMPC also injection molds the opener base, using Tyril®, a tough, stain-resistant plastic.

Specify CMPC . . . custom plastic molders for over 40 years.

CMPC CHICAGO MOLDED PRODUCTS CORPORATION

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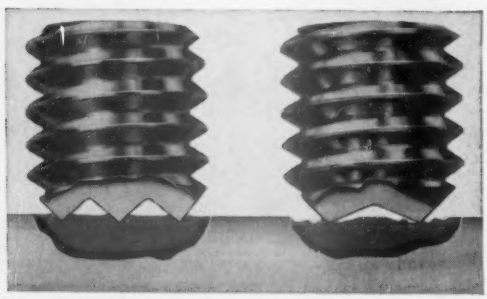
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Samples and complete technical data on the new

W-Point™ Socket Set Screw by Parker-Kalon®

Job-test this revolutionary new socket set screw in your own applications . . . get the highest degree of holding power ever attained. See how this new cup edge and pivot point development gives cleaner, far more uniform circular tracking — eliminates wobble and tipping. Greater contact area provides:

30% MORE BACK-OUT TORQUE
50% MORE RESISTANCE TO VIBRATION
50% MORE RESISTANCE TO ROTARY SLIPPAGE
ALL THIS — AT NO INCREASE IN PRICE!



Cutaway of W-Point Socket Screw (left) shows more even tracking, better contact than conventional cup-point variety (right).

Look to P-K® for socket screws for every design requirement— including the vibration resistant LONG-LOK with nylon-type polymer insert—the most complete line in the industry.

Write today for free samples and Technical Bulletin #1106.

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For More Facts Write No. 239 on Information Card—Page 32

Program Aids

To assist program chairmen in planning association meetings and company conferences, available film and other program aids will be listed in these columns from time to time.

"The Quiet Revolution"—Automation—Will it mean a Utopia or a major social upheaval? This is the provocative theme of a film that explores the impact of the new technology on American society and economy. Color, sound, 16 mm, running time: 22 minutes. Free on loan. Write to John Carley, Profit Counselors, Inc., 355 Lexington Avenue, New York 17, N. Y.

"Countdown at Pesco"—An 18 minute, 16 mm motion picture in full color and sound. Film tells the story of Pesco, a leading manufacturer of aircraft and missile components. Send requests to R. H. Montgomery, Pesco Products Division, Borg-Warner Corporation, 24700 N. Miles Rd., Bedford, Ohio.

"Old As The Hills"—The story of abrasion. Written for non-technical audiences, the movie shows how abrasives and the ceramic products made with abrasive materials are used in manufacturing. It is 16 mm, sound and in color. May be borrowed without charge. Write: Norton Company, Worcester 6, Mass.

"Anything, Any Place, Any Time"—Slide film illustrating how fork lift trucks negotiate difficult terrain. Viewing time is 20 minutes. Color. Available free by writing to Slide Film Department, Industrial Truck Division, Clark Equipment Company, Battle Creek, Mich.

"Language Of The Sixties"—Sound-strip film in color which describes the story of Magnetic Ink Character Recognition. Program chairman should contact A. B. Dick Company, 5700 West Touhy Avenue, Chicago 48, Ill.

For More Facts About Ad on Facing Page Write in No. 257→



Shaping Metals That Shape Your Future

. . . another important contribution by The H. M. Harper Company is the successful extrusion of Stainless Steels, Carbon and Alloy Steels, and Super-Alloy shapes. For example—even PH 15-7Mo, a high strength temperature resistant alloy, was extruded into 155 different shapes for use in the new 2,000 mile per hour Mach 3 B-70 Valkyrie!

The Harper process now makes it possible to successfully extrude even these alloys into an endless variety of shapes that are limited only by the imagination. Additional advantages are low initial die costs, material savings, and reduced costs of secondary machining. Experimental runs or long runs—short cut off sections or straight and true long lengths up to 60 feet—are available backed by thorough metallurgical control from billet casting to finished shapes. Write for complete information.

THE H. M. HARPER COMPANY

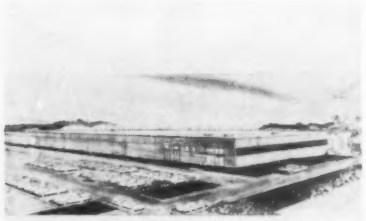
8210 Lehigh Avenue • Morton Grove, Illinois

NEW CONCEPT IN STAINLESS STEEL EXTRUSIONS BY HARPER STRENGTHENS B-70 FOR SPEEDS OVER 2,000 MILES PER HOUR!

Industry

Moore Business Forms, Inc., Niagara Falls, N. Y., has announced plans to build a million-dollar plant for the manufacture of business forms in Rutland, Vt. Construction of the new installation is scheduled for this spring in the industrial park area south of Rutland. It will be approximately 40,000 square feet in size with provision for expansion.

Philadelphia Gear Corporation has begun construction of a new gear research building and pattern shop. It will be located adjacent to the company's recently



completed manufacturing plant and general offices in **King of Prussia, Pa.**

The new building will occupy 60,000 square feet of floor area on one level. Occupancy is expected to be in the summer of 1961. The plant will be used for isolated testing of gear trains for radar and radio telescope applications.

The Cambridge Wire Cloth Company, Cambridge, Md., has opened a wire cloth warehouse facility at 7009 Long Drive, **Houston 17, Texas.** All of the most frequently used grades of wire cloth in standard metal-mesh sizes will be available for immediate shipment to users in the Southwestern area from the Houston warehouse.

Texas Eastman Company, a manufacturing division of **Eastman Kodak Company,** and a major producer of polypropylene, announces that large-scale commercial production has started in **Longview, Tex.** By mid-year the

(*Please turn to page* 164)



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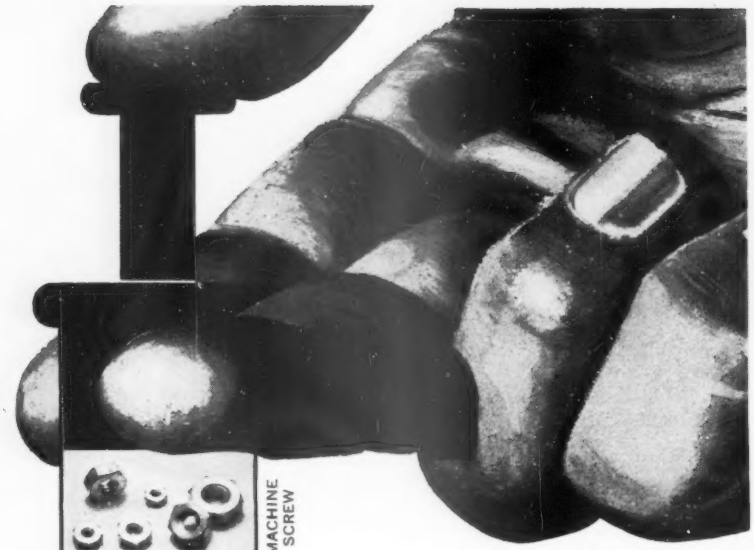
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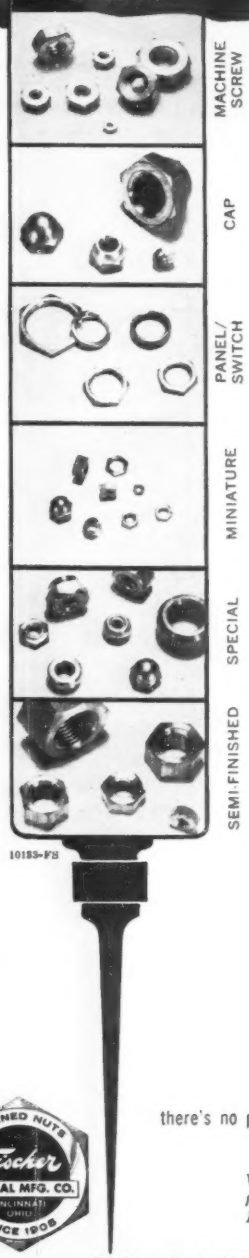
You can be sure of consistent quality in every weight of Crossett Leatherneck Wrapping Paper. You can be sure, too, of real savings. Our Basis Weight Control Program assures you maximum yards per ton at the strength you desire.

You will be pleased with the convenience of Cross-ett-Zip covering which features a built-in tear strip. No more cutting, no more wasted top layers of paper. One easy motion peels off the wrapper . . . lets clean, usable paper unwind from the first inch of the roll.

CROSSETT PAPER MILLS

A DIVISION OF THE CROSSETT COMPANY, CROSSETT, ARKANSAS, MAKERS OF PAPER, LUMBER, CHARCOAL AND CHEMICALS – ALL FROM MANAGED FORESTS.





Booster shot...

FOR "TIRED" ASSEMBLY AND FASTENING OPERATIONS

When production schedules sag and assembly problems give you a persistent headache . . . it's time to turn to Fischer for precision turned brass and aluminum nuts. Fischer produces standards, specials and miniatures in O.D. sizes from ⅛" to 1 1/16" . . . with tolerances on lengths and diameters held to +.000" and —.005" . . . combined with special thread diameters from No. "0" to ¾". The nuts pictured at left illustrate the wide range of Fischer's capabilities. Regardless of your requirements, you can depend on Fischer for premium quality nuts at competitive prices.

there's no premium for precision at Fischer

Write today for Catalog FS-1000.

FISCHER SPECIAL MFG. CO.
471 Morgan Street • Cincinnati 6, Ohio

TURNED NUTS Fischer SPECIAL MFG. CO. CINCINNATI OHIO SINCE 1908

For More Facts Write No. 259 on Information Card—Page 32

Industry

(*Continued from page* 162)

plant is expected to achieve a capacity of 20 million pounds annually.

A producer of plastics materials since 1932, Eastman adds polypropylene to its product list, which already includes acetate, butyrate, propionate, polyester, and polyethylene—all marketed under the trade name of "Tenite."

The W. S. Tyler Company, Cleveland, Ohio, has completed plans for construction of a manufacturing plant. The plant will be



located on a 118 acre tract in the **Mentor Industrial Park,** 25 miles from metropolitan Cleveland.

Providing more than 500,000 square feet of manufacturing space, the new plant will produce heavy gauge wire cloth and vibrating screen machinery for industrial and mining purposes. It is scheduled for completion in June, 1962.

A new division has been set up by **Thor Power Tool Company, Aurora, Ill.**

The **Thor Electronics Tooling Division** will develop new products specifically designed for manufacturers of electronic equipment. Initial tools to be developed will be used for making solderless wire wrapping connections.

Crucible Steel Company of America has announced that the plant of **Magnatronics, Inc., Elizabethtown, Ky.,** a wholly owned subsidiary of Crucible, is nearing completion. The new plant will produce ceramic permanent magnets, widely used in the electronic industry. Crucible makes

(*Please turn to page* 168)



Her new party dress will stay bright

That's because her lovely new cotton dress is bleached in Becco Hydrogen Peroxide. With this bleach, finishers produce dress goods with a good clear white and no reversion. What's more, dyed shades are brighter and they stay that way. And, converters and retailers find their customers are happier, since their garments stay brighter longer.

What's more, this would be true, too, if the little girl's dress were made of nylon, rayon-acetate, Arnel, or any one of a number of other synthetics, *providing* the bleach used was Becco's Peracetic Acid.

If your customers are demanding more quality this year, Becco, with more textile experience than any other bleach manufacturer, will help you keep them satisfied. Just drop us a line.

Address: Department PM-61-1.

BECCO Hydrogen Peroxide

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
Becco Chemical Division

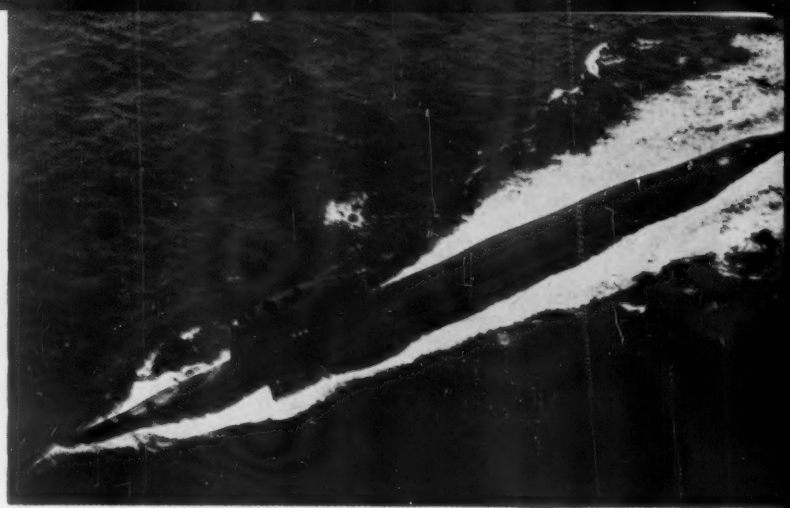
General Sales Offices:
161 EAST 42nd STREET, NEW YORK 17, N.Y.

For More Facts Write No. 260 on Information Card—Page 32

For More Facts About Ad on Following Page Write in No. 261→



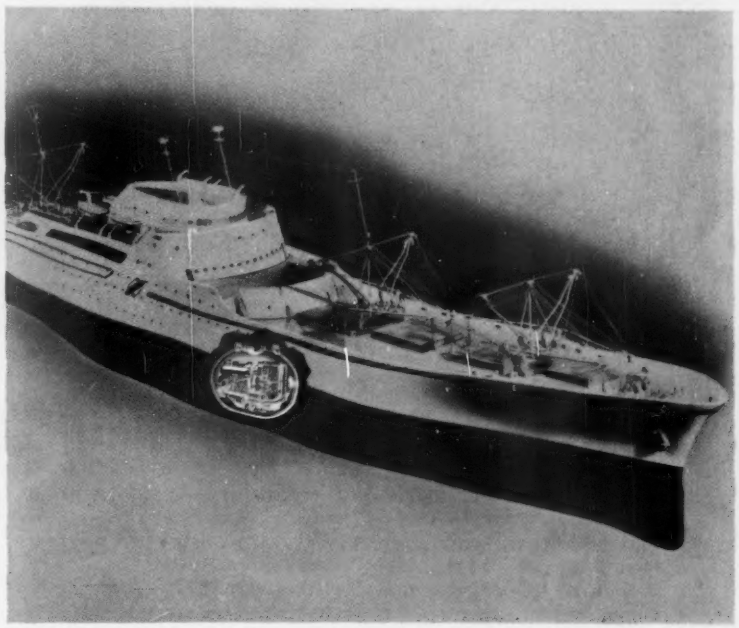
A company's reputation hangs on many things, including door hinges. This washer maker uses Stainless 430 Wire from Carpenter Webb Wire Division.



World's largest submarine, 447-foot, 5900-ton, atom-powered Triton, serves as early warning station for U.S. Navy task forces. Incorporated into its design for extra reliability are periscope mountings forged from Carpenter Stainless No. 4A (Type 304) Steel.



Family begs for eggs, thanks to this automatic skillet. Carpenter Low Expansion "42" Alloy in thermostat assures even temperatures...and tempers.



World's first nuclear-powered merchant ship, N.S. Savannah, will cruise for over 350,000 miles on one atomic fueling. The fuel assemblies for the Savannah power reactor contain 121 fuel rods clad in dependable Carpenter Type 304 Stainless Tubing.

Steel

you can do it consistently better with

The Carpenter Steel Company, Main Office and Mills, Reading, Pa. / Export Dept., Port Washington, N.Y.—"CARSTEELCO"



Everything adds up... to extra reliability in this famous-make bookkeeping machine. Contributing to its reliability are components shaped from Carpenter TGS Tool Steel. Again and again, wherever you find reliability a factor, Carpenter is first choice.



Research that profits you! From Carpenter's metallurgical laboratories come new tool steels to meet the demands of industry. Latest example: HI SHOCK 60 for applications involving extreme shock resistance. Now stocked for immediate deliveries.



Sets the pace in space! The "Discoverer" scores high on predictable performance. Used forgings of Carpenter High Temperature N-155 Alloy.

Carpenter Specialty Steels for Specialists

Alloy Tube Division, Union, N.J. / Webb Wire Division, New Brunswick, N.J. / Carpenter Steel of New England, Inc., Bridgeport, Conn.



PICTURE OF
OUR SALES DEPARTMENT'S

SECRET WEAPON

Almost 75 years of specializing in a single category of products . . . *washers and stampings* . . . has given our company some established traditions and policies.

One of them is uniformly fair and realistic handling of *quotations* — to customers and prospective customers alike.

We don't go into orbit over a $100,000 order, nor do we sniff at one for $10. Both are welcome here. Both receive equal consideration.

We believe that businesses grow big, in any field of endeavor, because (a) they provide superior products and services, and (b) they treat every customer alike, with consideration and courtesy. And that includes quoting the *lowest* prices consistent with good business and providing us a fair profit.

Milwaukee Wrot Washers are the world's No. 1 seller. Next time you have a washer order to place, or want quotations, or need washers of special types, we would like to have your business.



PURCHASING PERSONNEL . . . Free samples available. Request on your letterhead, mentioning types of washers your company uses most frequently.

MILWAUKEE WROT WASHERS SINCE 1887

WROUGHT WASHER MFG. CO.

2101 S. BAY ST., MILWAUKEE 7, WIS. • SHeridan 4-0771 • twx MI 277

WORLD'S LARGEST PRODUCER OF WASHERS

For More Facts Write No. 262 on Information Card—Page 32

Industry

(*Continued from page* 164)

alnico permanent magnets at its plant in Harrison, N. J. With the new products to be manufactured at the Kentucky plant it can now offer most kinds of permanent magnet in use today.

The National Cash Register Company has purchased a seven-acre site at **Arlington between Dallas and Fort Worth,** on which it will build a new supply production plant.

The new 50,000-square-foot facility is scheduled to be in operation by the end of 1961. It will manufacture magnetic ledger cards used in NCR bank automation systems, as well as other special forms for various types of NCR business systems and machines.

The Crossett Company will double the capacity for the production of electrical power at **Crossett Paper Mills** with a $4 million expansion program. Preliminary engineering is already underway on the project, scheduled for completion in the latter part of 1962.

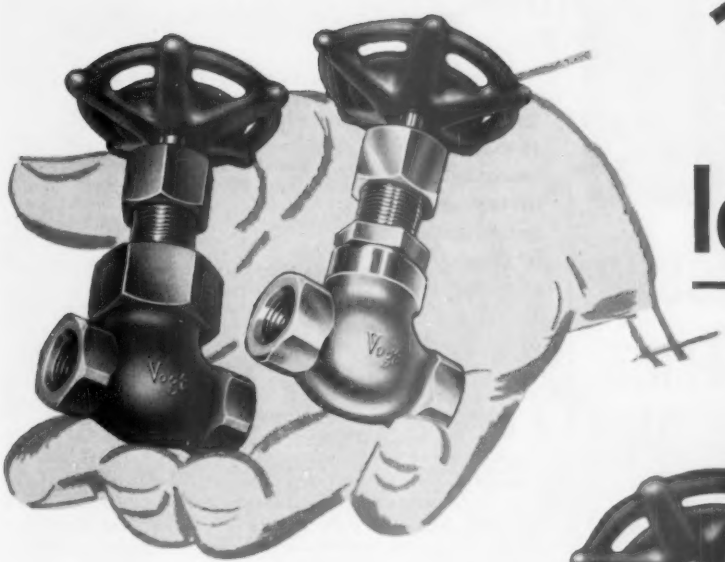
Total capacity will be raised to about one million pounds of steam per hour and 36,000 kilowatts of electricity. It is anticipated that about 75% of the power potential will be put into use immediately, with the remaining capacity held in reserve to accommodate later plant expansions.

A new warehouse which will carry a complete stock of nonferrous and stainless steel fasteners (bolts, nuts, screws, rivets and washers) was recently opened by the **H. M. Harper Company, Morton Grove, Ill.**

The building, located at **8530 LaPorte Freeway, Houston, Tex.,** will serve customers throughout Texas, Oklahoma and Louisiana. H. M. Harper Company also produces stainless steel and carbon steel industrial extruded shapes at its main factory in Morton Grove, and has other warehouses and offices in New York, Los Angeles and Toronto.

New higher quality

New lower price





Enlarged production facilities combined with improved manufacturing techniques enable Vogt to pass on the effected savings to our customers.

Service proved — these valves have always been a standard of quality for meter and gauge line service. You no longer need to compromise for less because of price! Send for Folder GP-9 giving specifications and engineering data on both globe and angle types, forged from stainless or carbon steel for every meter and gauge line service.

Address Dept. 24A-FPM

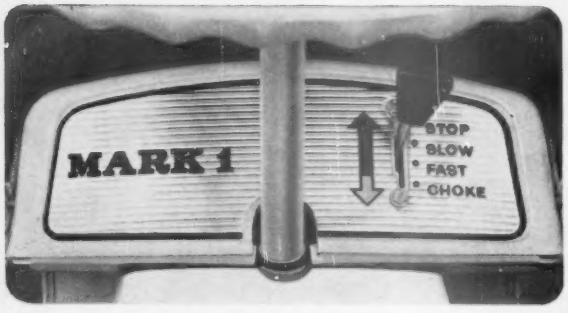
Vogt

HENRY VOGT MACHINE CO.
Louisville, Kentucky
SALES OFFICES: Camden, N. J., Charleston, W.Va., Chicago, Cleveland, Dallas, Los Angeles, New York, St. Louis.

For More Facts Write No. 263 on Information Card—Page 32



Fasson Self-Adhesive Grill and Dash Trim Save Porter-Cable 25%



"Arthur Pulos, our industrial design consultant, suggested these weatherproof Fasson Mylar-Vinyl panels to inexpensively dress up the tractor's styling and achieve brand name remembrance," reports Porter-Cable's chief engineer, Richard Lamkin.

"The application of the self-adhesive panels is a simple, assembly line procedure, and is a definite time-saver compared to painting or adding actual parts for the grill and dash panels. Using Fasson saves us 25%."

Put more sales appeal in your products . . . economically . . . with decorative trim and nameplates of durable, gleaming Fasson self-adhesive Mylar*-Vinyl.

*Mylar is a DuPont Polyester Film

Send for free samples and literature

fasson **Fasson Products**

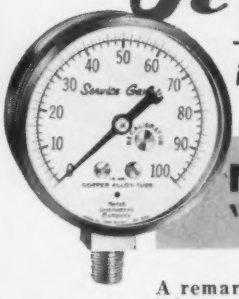
An Avery Company
Dept. E, 250 Chester Street, Painesville, Ohio

Makers of self-adhesive papers • foils • films • for converters

For More Facts Write No. 264 on Information Card—Page 32

It fits in

—to a wide range of in-plant and original equipment needs



New MARSH "Service Gauge"

A remarkable series of 2½" gauges brings you quality, accuracy and stamina —along with REAL economy!

Ranges: 15-30-60-100-160-200-300-600-1000 lbs. and 30" vacuum ¼" bottom connection.

All have strong 2½" bonderized case and brass screwed ring with bevelled glass. All have new Marsh "Read-easy" dial. All are *standard* with Marsh "Recalibrator." Every gauge is guaranteed accurate within 1% of dial reading.

Two types cover wide range of needs: Type 11 has silver-brazed copper alloy bourdon tube and bronze-bushed movement. Type 11S has 316 stainless steel bourdon tube with 303 stainless tip and socket; stainless steel and monel movement.

Ask For New Bulletin

MARSH INSTRUMENT COMPANY Dept. G, Skokie, Ill.

Division of Colorado Oil and Gas Corporation

Marsh Instrument & Valve Co., (Canada) Ltd., 8407 103rd St., Edmonton, Alberta, Canada • Houston Branch Plant, 1121 Rothwell St., Sect. 15, Houston, Texas • Eastern Seaboard Warehouse: Marsh Instrument Company, 1209 Anderson Ave., Fort Lee, N.J.

GAUGES • THERMOMETERS • VALVES

For More Facts Write No. 265 on Information Card—Page 32

How to Get Your Name on the Mailing List

and receive your own personal copies of PURCHASING as soon as issued!

Why wait to see pass-along copies when it is so easy to have your own subscription? You can read PURCHASING at your own leisure . . . and build a valuable idea file of helpful articles, or save the entire magazine.

The know-how you accumulate this way will be returned many times over by making your work easier . . . and more profitable.

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205 E. 42nd St., New York 17, N.Y.

Send me PURCHASING every-other-week, as fast as issued, at your bargain rate of only $4 for the 26 copies.

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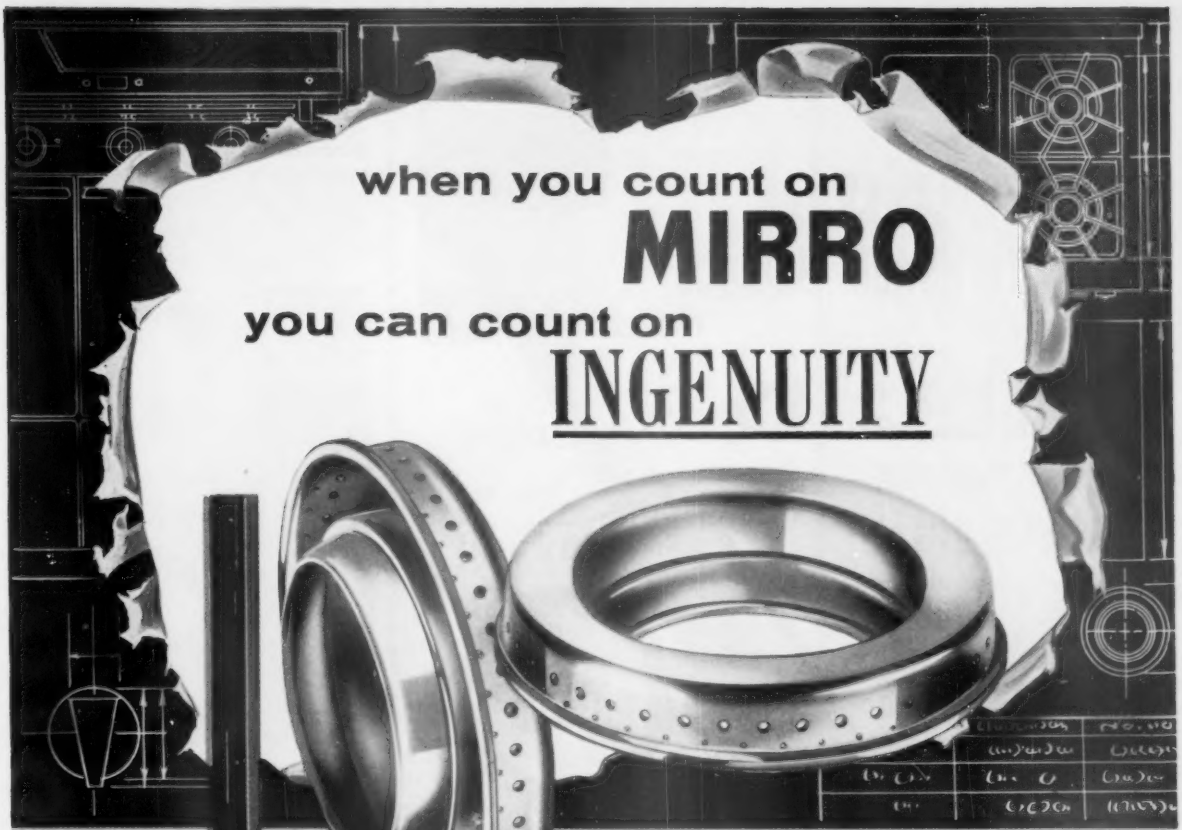
Name ..... Title .....
Company ..... Principal Product .....
Address .....
City & Zone ..... State .....
☐ Send Purchasing to my home address:—
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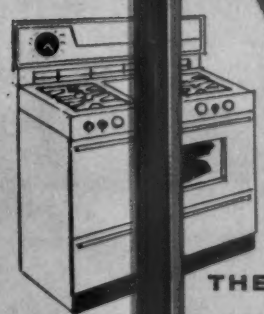
when you count on

MIRRO

you can count on

INGENUITY





THE METAL MEN OF MANITOWOC



COUNT ON MIRRO for any production line requiring aluminum components...appliances, housewares, automotive, or Government contracts.

MIRRO
THE FINEST ALUMINUM

This gas range burner ring, for a manufacturer of '61 Gold Star models, is a case in point. It's a demanding piece to make. Shoulder tolerances must be held within .005" level. Each gas outlet port must direct flame at a *precise* angle. The smaller series of ports asks the theoretically "impossible," by requiring a diameter smaller than the gauge of the metal itself. And it must function consistently in all temperatures, from a dead-cold start to flame-heat.

MIRRO ingenuity devised the dies and draws, noodled out the indexing equipment for series punching of outlet ports, and supplies the completed piece in volume, meeting the tough A.G.A. laboratory standards at a practical price.

There's a whole lot back of a job like this. Years of aluminum know-how. Highly capable engineers and designers. MIRRO's own rolling mill and metallurgical staff. Complete finishing facilities. Rigid quality control. And the constant awareness that pennies saved mean dollars earned, on any high-volume contract.

Count on MIRRO and you can count on *all* of that, backing any contract job you place with us. We'd welcome a chance to estimate or advise.

MIRRO ALUMINUM COMPANY, MANITOWOC, WISCONSIN
Fifth Avenue Bldg., New York 10
Merchandise Mart, Chicago 54

For More Facts Write No. 266 on Information Card—Page 32

Rugged Design... Easy-to-Handle Balance

RIDGID®
HEAVY-DUTY
PIPE
CUTTERS

give faster, straighter cuts

Five Sizes for ⅛" to 6"



Pick up a RIDGID Heavy-Duty Pipe Cutter, and you'll instantly know why it makes pipe and conduit cutting far easier. Perfectly balanced . . . gives you a feel of confidence no other cutter can match. See the extra-long shank that protects handle threads . . . assures easy pressure application. Feel the large, smooth handle that gives you a comfortable, powerful grip. Try it, and you'll find a built-in cushion to keep the cutter wheel "on track" through hard or uneven spots. Rugged frame, guaranteed not to break or warp, stays straight for clean cuts every time.

You'll Want a RIDGID 4-Wheel Pipe Cutter for Work in Tight Places!

Call your Distributor today. For your convenience, he maintains a complete stock of RIDGID Work-Saver Pipe Tools and Parts!

RIDGID®
The Ridge Tool Company, Elyria, Ohio, U.S.A.

For More Facts Write No. 267 on Information Card—Page 32

Suppliers

Appointment of J. T. Pitts as sales manager of its **Brown Instruments Division,** has been announced by **Minneapolis-Honeywell Regulator Company.** He succeeds J. A. Robinson, who joins the company's six-division **Industrial Products Group** to coordinate expanding activities in the metals producing areas. Mr. Pitts has been Southwest regional manager for the company.



J. T. Pitts

C. W. Bent has been appointed product sales manager of attachments and container handling equipment for the **Industrial Truck Division, Clark Equipment Company, Battle Creek, Mich.** Mr. Bent has been product manager of container handling devices.



C. W. Bent

Suppliers

Harold F. Griffiths has been appointed sales manager of **Federal Tool and Manufacturing Com-**



Harold F. Griffiths

pany, Minneapolis, Minn. He will direct marketing activities for the company throughout the U. S.

Robert R. Rhodes has been named manager of sales at **Worthington Corporation's Standard Pump Division, East Orange, N. J.** Mr. Rhodes succeeds Lewis M.



Robert R. Rhodes

Evans who has become Eastern regional resale sales manager, marketing division. Mr. Rhodes joined Worthington's Harrison Research engineering department in 1943. He was transferred to the

(*Please turn to page* 176)



Solution to a packaging problem

The Robert A. Johnston Co., of Milwaukee, Wisc., had a problem in packaging their "Windsor Sugar Thins" cookies. The container shown was the perfect answer.

This container of quality paper board with a greaseproof liner furnishes the protection needed. The bright tin plug which fits snugly into the top, the tinplate bottom securely seamed on, and an attractive label complete the unit. Freshness of contents and good shelf display were assured.

Another example of how Cleveland Container can develop a package around a product . . . at low unit cost.

Write for our latest Packaging Brochure.

Our plants are equipped to produce containers of any style, in any diameter or height, whether the type is a transparent C-Thru, a fibre body or one with the new "Dial-O-Matic" plastic top. Special liners for added protection are available as well as waterproof foil labels for brilliant sales appeal.

Ask our nearest plant for engineering service.

THE
CLEVELAND CONTAINER
COMPANY

Plants and Sales Offices: Cleveland, Chicago, Memphis, Dallas, Los Angeles, Plymouth, Wis., Jamesburg, N. J., Greensboro, N. C.

6201 BARBERTON AVE. • CLEVELAND 2, OHIO

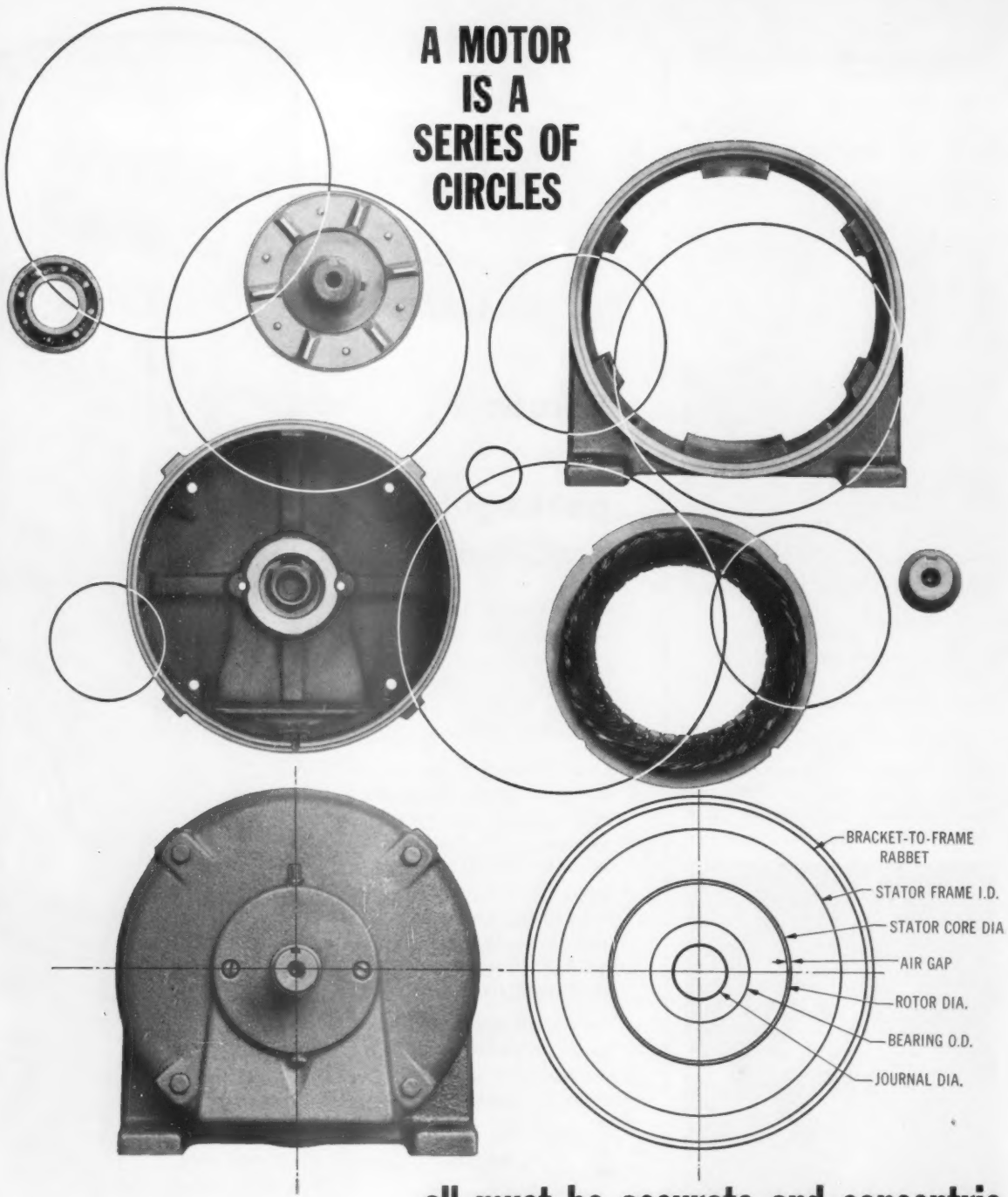
ALL-FIBRE CANS • COMBINATION METAL AND PAPER CANS
SPIRALLY WOUND TUBES AND CORES FOR ALL PURPOSES

CLEVELAND CONTAINER CANADA, LIMITED
Plants & Sales Offices: Toronto & Prescott, Ont. • Sales Office: Montreal

Sales Offices: Detroit, New York City, West Hartford, Rochester, N. Y., Washington, D. C.
•
Abrasive Division at Cleveland

For More Facts Write No. 268 on Information Card—Page 32

A MOTOR IS A SERIES OF CIRCLES



all must be accurate and concentric

In manufacturing Elliott Crocker-Wheeler motors, a dozen critical "circles" are formed accurately and concentrically through unique and extraordinarily precise production methods. The result is exact alignment of all parts, true and uniform air gap, free-spinning rotor, quiet, cool, dependable operation.

■ *Elliott Crocker-Wheeler integral-hp a-c and d-c motors—from smallest to largest—are offered in all conventional enclosures and modifications; with insulation to suit the application, including* EPA•SEAL *epoxy insulation for use where conditions are most severe.*

W1-3

ELLIOTT COMPANY

GENERAL OFFICES: JEANNETTE, PENNSYLVANIA

PLANTS AT: Jeannette and Ridgway, Pa.; Springfield, Ohio

TURBINES · GENERATORS · MOTORS · COMPRESSORS · TURBOCHARGERS · EJECTORS · STRAINERS · TUBE CLEANERS

For More Facts Write No. 269 on Information Card—Page 32

Save Sales! Stop Sifting! with... Calk-Seal*



With many items — like cereals, dry, powdered or granulated foods, soap products — consumers rarely make formal complaints when packaging fails. They just turn to another product, and you never learn about it *until the sale is lost.*

Packaging Corporation designers have developed the exclusive Calk-Seal technique to prevent sifting and infestation — assuring a positive moisture-resistant seal, *completely* tight from the time it leaves the filling line. Elimination of inner bags or overwraps makes economical higher line speeds possible.

Calk-Seal is a simple, inexpensive means of sealing cartons with a permanently pliable, non-tainting material. Positive, damage-proof sealing is accomplished by the combination of VanBuren ears and the application of Calk-Seal. Regular adhesives are used to make flap and ear seals. Failure from imperfect carton formation is eliminated. Special moisture protective laminates are available. For a modest investment, Calk-Seal applicators can be attached to existing lines. Phone or write today for information.

*Machine and process patents applied for.

Planned Packaging moves merchandise

Packaging Corporation of America

1632 CHICAGO AVENUE • EVANSTON, ILLINOIS

Cartons • Containers • Displays • Egg Packaging Products • Molded Pulp Products • Paperboards • Plastics

For More Facts Write No. 270 on Information Card—Page 32

For Quality and Economy Use

MALLEABLE

For Service Contact...

CONNECTICUT
Connecticut Mall. Castings Co., New Haven 6
Eastern Malleable Iron Co., Naugatuck
DELAWARE
Eastern Malleable Iron Co., Wilmington 99
ILLINOIS
Central Fdry. Div., Gen. Motors, Danville
Chicago Malleable Castings Co., Chicago 43
Moline Iron Works, Moline
Moline Malleable Iron Co., St. Charles
National Mall. and Steel Castings Co., Cicero 50
Peoria Malleable Castings Co., Peoria 1
Wagner Castings Company, Decatur
INDIANA
Albion Malleable Iron Company, Muncie Division, Muncie
Link-Belt Company, Indianapolis 6
National Mall. & Steel Castings Co., Indianapolis 22
IOWA
Iowa Malleable Iron Co., Fairfield
MASSACHUSETTS
Belcher Malleable Iron Co., Easton
MICHIGAN
Albion Malleable Iron Co., Albion
Auto Specialties Mfg. Co., Saint Joseph
Cadillac Malleable Iron Co., Cadillac
Central Fdry. Div., Gen. Motors, Saginaw
MINNESOTA
Northern Malleable Iron Co., St. Paul 6
MISSISSIPPI
Mississippi Malleable Iron Co., Meridian
NEW HAMPSHIRE
Laconia Malleable Iron Co., Laconia
NEW YORK
Acme Steel & Mall. Iron Works, Buffalo 7
Frazer & Jones Company Division Eastern Malleable Iron Co., Solvay
Oriskany Malleable Iron Co., Inc., Oriskany
Westmoreland Mall. Iron Co., Westmoreland
OHIO
American Malleable Castings Co., Marion
Central Fdry. Div., Gen. Motors, Defiance
Dayton Mall. Iron Co., Ironton Div., Ironton
Dayton Mall. Iron Co., Ohio Mall. Div., Columbus 16
National Mall. and Steel Castings Co., Cleveland 6
PENNSYLVANIA
Buck Iron Company, Inc., Philadelphia 22
Erie Malleable Iron Co., Erie
Lancaster Malleable Castings Co., Lancaster
Lehigh Foundries Company, Easton
Meadville Malleable Iron Co., Meadville
Pennsylvania Malleable Iron Corp., Lancaster
TEXAS
Texas Foundries, Inc., Lufkin
WEST VIRGINIA
West Virginia Mall. Iron Co., Point Pleasant
WISCONSIN
Belle City Malleable Iron Co., Racine
Chain Belt Company, Milwaukee 1
Federal Malleable Company, Inc., West Allis 14
Kirsh Foundry Inc., Beaver Dam
Lakeside Malleable Castings Co., Racine
Milwaukee Malleable & Grey Iron Works, Milwaukee 46

These companies are members of the Malleable Castings Council

For More Facts About Ad on Facing Page Write in No. 280→

Suppliers

(*Continued from page* 173)

Standard Pump Division in 1955 where he has served as assistant sales manager until his recent promotion.

Peerless Steel Equipment Company has announced the assignment of John F. Schork to its



John F. Schork

Chicago, Ill. sales office at 36 S. Wabash Ave. Mr. Schork has been associated with the company twelve years as their Ohio Valley sales representative.

Gordon Moos has been elected vice president in charge of the Fastener **Division, Spiron, Inc., Silver Spring, Md.** Mr. Moos will



Gordon Moos

be in charge of all fastener sales and merchandising, new product development and Government and industry standardization programs. He will make his headquarters at the company's offices and factory at 2412 Linden Lane in Silver Spring. Mr. Moos formerly was assistant to the vice president in charge of sales and production for Waldes Kohinoor, Inc., Long Island City, N. Y.

A. F. Boucher has been made general sales manager of **The Lincoln Electric Company, Cleveland, Ohio.** Mr. Boucher succeeds J. S. Roscoe who will devote full time to special market development assignments.

Robert M. Simpson has been appointed assistant director of sales for **Crucible Steel Company of America, Pittsburgh, Pa.** In his new position, Mr. Simpson will assist in the direction of all sales



Robert M. Simpson

activity of the company. He will act as second in command to Josef H. Buerger, Jr., the company's director of sales. His work will include supervision of both field sales, through the 38 branch warehouses and sales offices, and the sales managers of product divisions.

Fairmont Aluminum Company, Fairmont, W. Va., has named James R. Petty as manager of the company's branch sales office in **Milwaukee, Wisc.** Mr. Petty has been a salesman for the Chicago district office of the company.

Tool and Hardware Manufacturers Use Malleable for the Parts They Guarantee...

"Guaranteed Against Warping or Breaking" is the seal of quality often found on tools and hardware made of Malleable iron. Frequently Malleable components are guaranteed while the other materials in the same tools are not.

Proven performance superiority has induced many tool and hardware manufacturers to switch to Malleable castings so they, too, can guarantee their products. At the same time, they often reduce their costs. How? Because Malleable provides more strength per dollar than any other metal; Malleable is the most machinable of all ferrous metals of similar properties; Malleable is truly outstanding for its toughness, ductility, castability and corrosion resistance. While Malleable's natural appearance is attractive, a wide variety of finishes can be applied for added customer appeal.

Improve your products by using Malleable castings. Check with any Malleable producer that displays this symbol —

MEMBER
MALLEABLE
CASTINGS COUNCIL

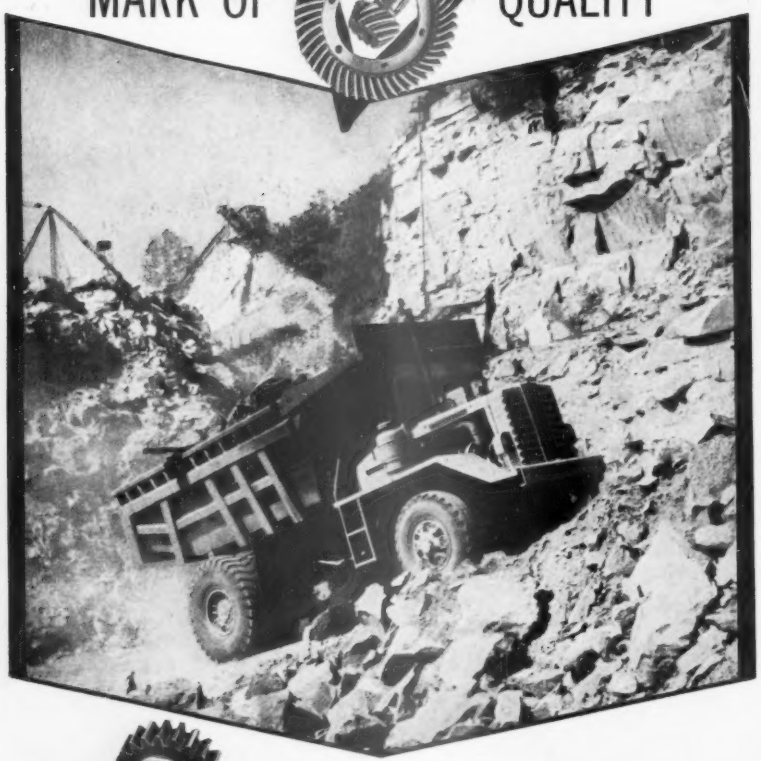
Profitmaking Ideas are yours free in our Data Unit No. 114, available from any member foundry, or Malleable Castings Council, Union Commerce Building, Cleveland 14, Ohio.





The manufacturer of this unit converted his entire line of machinist vises to Malleable... then guaranteed them against breakage. Not one claim has been made in three years!

MARK OF QUALITY



GEARS by FAIRFIELD





There is no finer recommendation for the quality of YOUR PRODUCT than to be able to say it is "Equipped with FAIRFIELD GEARS!" Long a leading producer of the gears needed for high grade trucks and tractors, Fairfield also brings the same standards for quality, precision, and performance to a wide variety of products: Agricultural Implements . . . Power Shovels . . . Machine Tools . . . Road Graders . . . Lift Trucks . . . Diesel Locomotives . . . and a host of others.

Fairfield's facilities are unexcelled — you get all the benefits of high production rates and big volume output in an ultra-modern plant designed for producing fine gears EFFICIENTLY . . . ECONOMICALLY. Your inquiry will receive prompt attention. FAIRFIELD MANUFACTURING CO., INC., 2321 S. Concord Rd., Lafayette, Indiana.



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Gears and Differentials Made to Order for:

TRACTORS • HEAVY DUTY TRUCKS • AGRICULTURAL MACHINERY • POWER SHOVELS AND CRANES
MINING MACHINES • ROAD GRADERS • BUSES • STREET SWEEPERS • INDUSTRIAL LIFT TRUCKS

For More Facts Write No. 281 on Information Card—Page 32

Contracts: What Does "Or Equal" Mean

(*Continued from page 90*)

In this case however the ventilating contractor had omitted securing the approval of the architect to this substitution. In support of his contention that the contract permitted him to make this substitution, the contractor referred to a similar case decided in the state of Washington several years before.

In this instance, a contract for the remodeling of a building in Seattle contained the clause: "All sidewalk lights to be 3″x3″ reflecting prism lenses set in cement; all frames to be what is known as bar-like construction; all joints must be made and guaranteed water tight. These lights shall be of the W. B. Jackson make, or equal, and shall be constructed to carry a safe load of 350 lbs per sq ft."

Take a Dim View

Here the contractor, seeking to take advantage of the "or equal" clause of the contract, told the architect of prism lights equal to the Jackson light, which he would like to submit to him for approval. The architect refused either to examine or to consider them, asserting that there were no lights equal to the Jackson lights and that no other or different lights would be approved.

The contractor installed Jackson lights but sued for the difference in cost between them and the lights he had recommended to the architect.

The state Supreme Court sustained the right of the contractor to recover the additional expense incurred in the installation of this particular type of lights specified in the contract over the cost of those he had claimed to be "equal".

"The contractor," the court held, "had the right to treat the direction given by the architect as a direction given by the owner and can recover any loss suffered therefrom if the direction was so far arbitrary as to be without the terms of the contract. No doubt the contractor could have very

(*Please turn to page 180*)

For More Facts About Ad on Facing Page Write in No. 282→



in danger of becoming BRAND ?

Don't take a chance . . . help insure your product's reputation with Shakeproof® Live Action Lock Washers.

Sound oversimplified? It's really not! It's the little things that often sour hard-won reputations–cause brand positions to slip.

An important "little thing" in your product is fasteners. If they don't measure up–they may result in the "little things" that make your customers someone else's–next time! Doesn't it make sense to be sure that your fasteners are the best?

It makes a lot of sense! That's why so many manufacturers insist on genuine Shakeproof® Live Action Lock Washers. They've found out that a substitute for quality doesn't pay. They know that only Shakeproof Live Action Lock Washers lock right –stay tight. Multi-toothed line bite, built-in spring reaction and strut action bracing make sure of it.

Don't take a chance on your products becoming brand "X". Insist on genuine Shakeproof Live Action Lock Washers.



Ask for a Shakeproof sample kit—Prove Live Action Product insurance yourself. Get test samples and booklet with information on washer sizes, types and prices.



SHAKEPROOF

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In Canada: SHAKEPROOF/FASTEX, Division of Canada Illinois Tools Ltd.
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COTTON* CLICKS IN CAMERA PLANT



*Cotton toweling supplied to Keystone Camera Company by Union Garment and Towel Supply Co., Inc., Dorchester, Mass.

● With distribution throughout the United States and in 65 foreign countries, the Keystone Camera Company manufactures an extensive line of cameras and projectors. The plant, a modern five-story steel and concrete structure with 30,000 square feet of floor space, has more than 1,100 employees.

Before the installation of cotton toweling, four truck loads of waste towels had to be disposed of daily. Costly, too, were frequent plumbing problems caused by waste towels. Cotton toweling not only eliminated both these problems completely—but also assured neater, cleaner wash rooms.

Why not start these advantages working for you. Write for free booklet to Fairfax, Dept. S-4, 111 West 40th Street, New York 19, New York.

Here's How Linen Supply Works...



You buy nothing! Your linen supply dealer furnishes everything at low service cost—cabinets, pickup and delivery, automatic supply of freshly laundered towels and uniforms. Quantities can be increased or decreased on short notice. Just look up LINEN SUPPLY or TOWEL SUPPLY in your classified telephone book.

Clean Cotton Towels...

Sure Sign of Good Management

Fairfax Towels WEST POINT TEXTILES

WELLINGTON SEARS COMPANY, 111 WEST 40TH STREET, NEW YORK 18, N. Y.

For More Facts Write No. 283 on Information Card—Page 32

Contracts: What Does "Or Equal" Mean?

(*Continued from page* 178)

properly put in lights equal to the W. B. Jackson lights and recover on the contract by showing that the architect's objections thereto were arbitrary and not in the exercise of an independent and honest judgment but this was not his only remedy.

"He was justified in obeying the architect's instructions and in seeking to recover for the loss sustained thereby. Manifestly the contractor was given the option either to put in the W. B. Jackson lights or lights equal to the W. B. Jackson lights and, this being so, the installation of either would be a compliance with the contract."

Exclude Competitive Bids

But, perhaps, the New Jersey Supreme Court has given the final word in the "or equal" controversy. A few years ago the borough of Longport awarded a contract to a New York company for the construction and installation of a gravel filter well and water pumping equipment. Residents attacked the award on the ground that the specifications were so drawn that they excluded competitive bidding and would permit only one company to qualify.

The specifications read: "The work to be done includes the construction of a gravel filter well unit, Layne type or equal, complete with pumping equipment and auxilliary engine drive having a guaranteed minimum capacity of not less than 700 GPM against a surface pressure of not in excess of 25 feet."

Of the use here of "or equal," the New Jersey court said: "It would seem that a careful reading of the above quoted portion of the specifications does not preclude bidding so as to bar any bid except that of the New York company. Albeit the specifications call for a 'Layne type' gravel filter well unit, provision is therein made for other types of equipment by the use of the words 'or equal.' To hold otherwise would be to do violence to plain and simple English." ► END

For More Facts About Ad on Facing Page Write in No. 284→



Ordinary hydraulic fluid made from mineral oil is ignited by open flame. Torch is 18 inches from nozzle orifice.

Shell Irus 902 Hydraulic Fluid, in the same test, refused to be ignited by 3000-degree flame.

BULLETIN:

3000-degree flame does not ignite Shell Irus 902—the fire-snuffing hydraulic fluid that helps make factories safe from fire

Shell forced Irus® 902 Hydraulic Fluid through a .145-inch orifice at 1000 psi pressure. The Irus Fluid was sprayed from the orifice and a 3000-degree flame thrust into the streaming fluid. Irus was not ignited.

Read the advantages of economical Shell Irus 902 and how it can protect your plant.

IRUS 902 is the fire-snuffing hydraulic fluid that protects lives and equipment.

How Irus works

Irus 902 is an ingenious combination of oil and water. The water is encased in a film of oil. In technical terms, it is a 100% water-in-oil emulsion.

But unlike other emulsions, Irus 902 has optimum stability. This is vitally important. It means that Irus Fluid will retain its lubricating qualities far longer than unstable oils—and will not allow the water to separate out. Result: the water stays in the oil, ready to snuff a fire if needed.

Other advantages

1. Cools off systems. Because of its high rate of heat transfer and high heat capacity, Irus 902 can allow hydraulic systems to run cooler.

2. Resists thickening and thinning. The viscosity of Irus 902 is tailored to protect pump parts during the entire working cycle—from cold start-up to hot, continuous operation.

3. Saves gaskets, packing, hose. Irus 902 is gentle to nonmetallic parts as well as metal. It can be used almost anywhere that you'd use mineral oil.

4. Resists foaming. Irus 902 does not hold captive air. If air is introduced, Irus 902 quickly releases it.

5. Easier to spot leaks. Irus 902 is bright yellow, helps you spot leaks quickly.

For complete details about changing over to Shell Irus 902, contact your nearest Shell Industrial Products Representative. Or write: Shell Oil Company, 50 West 50th Street, New York 20, N. Y.

A message to manufacturers of hydraulic equipment

Shell Irus 902 makes an excellent initial fill.

1. It is available anywhere in the U.S.A.

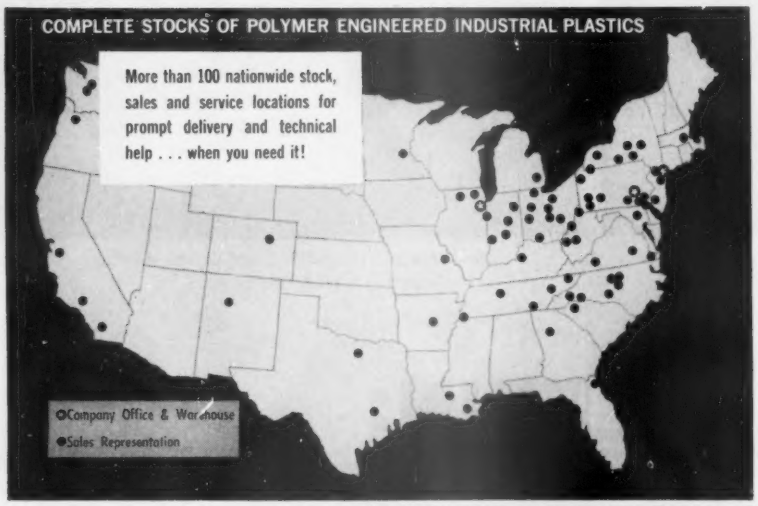
2. Quality of Irus Fluid is consistently high. It must meet strict Shell specifications.

SHELL

A BULLETIN FROM SHELL
—where 1,997 scientists are working to provide better products for industry.

POLYPENCO

AT YOUR BACK DOOR



When it comes to the really demanding jobs for industrial plastics —where deviation from the highest uniform quality may mean trouble —it pays to specify POLYPENCO. Solve your problems of in-plant production and end-product reliability today with the consistent high quality of POLYPENCO plastics, processed for uniformity in physical, chemical and electrical properties.

And you can get POLYPENCO Nylon, Teflon and other engineering materials in the widest range of stock shapes and sizes available . . . to produce your finished part.



Stock Shapes for Fast, Low-Cost Fabrication

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POLYPENCO Q-200.5
POLYPENCO Penton‡ Chlorinated polyether
POLYPENCO Polycarbonates

Sintered Plastic Parts

FLUOROSINT® TFE-fluorocarbon composition
NYLASINT® Sintered Nylon
FERROTRON® Ferromagnetic Materials

Molding Resins

NYLATRON® GS Nylon compound

†Trademark Du Pont
‡Trademark Hercules Powder Co.

The Polymer Corporation

Reading, Pa.

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EXPORT: Polypenco, Inc., Reading, Pa., U.S.A.

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under "Plastics Supply Centers"

The Polymer Corporation
Reading, Pennsylvania

Please send your new bulletin on POLYPENCO Industrial Plastics

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Company .....

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City ..... Zone ..... State .....

For More Facts Write No. 285 on Information Card—Page 32

Better Filing Helps Cut Inventory

(*Continued from page* 85)

The analyst, who receives requisitions from the stock room, has two VISIcards on file: a control card for follow-up—identical to the production item purchase order follow-up card—and a traveling requisition card.

The traveling requisition is 6¾ by 7 inches and has space for a description of the item; maximum, minimum, and re-order points; monthly usage record; list of vendors and remarks about them; and a complete record on the items ordered.

When the analyst receives a requisition from the stock room, he posts the date and quantity on the control card, which is kept in the file for follow-up. The requisition and traveling requisition card go to the buyer who asks for bids and notes them on the card when they are returned. He also indicates which is the successful bid by writing the purchase order behind that bid. Together the two cards provide a permanent record of prices and also of vendor performance.

Had No Price History

The purchase order number, the vendor, and the shipping date promised are posted on the control card, which is tabbed on the day the shipment is supposed to arrive. The color of the metal tab indicates the month. If no "goods received" form is in by the due date, the usual follow-up procedures are followed.

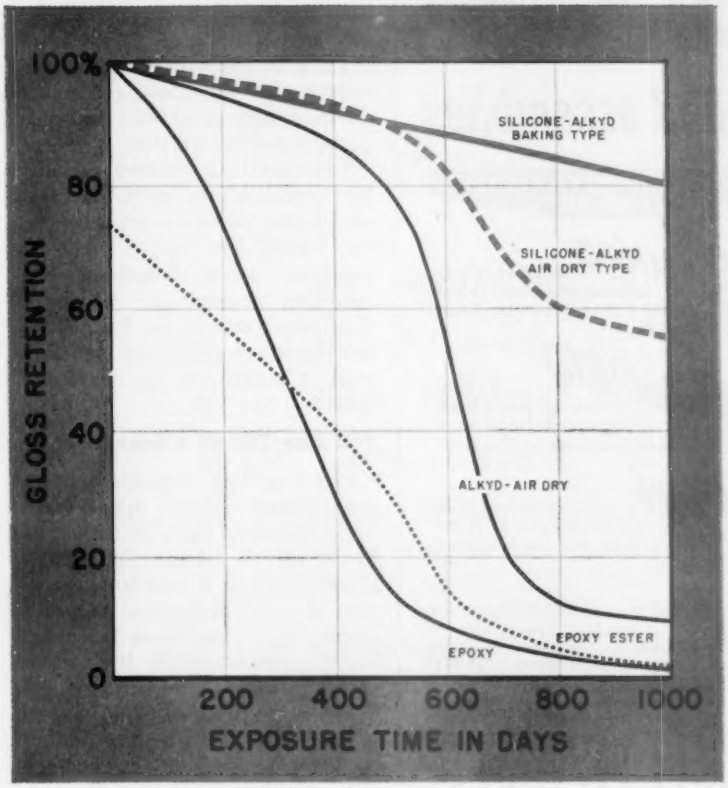
Under the previous system, a copy of the purchase order was kept in a manila folder in drawer files with odd-numbered days of the month stamped across the top. A colored tab, indicating the month, was placed on the day shipment was desired. There was no price history and no vendor performance record such as we now have.

(3) Non-Production—Non-Production items are handled by one buying group with two analysts, one for plant engineering and one for tool stores. Their file also has two VISIrecord cards: A travel-

(*Please turn to page* 184)

SILICONE NEWS from Dow Corning

Why Hire Part-Time Paint?



Silicone-based paints last longer, cost less

It makes little sense to keep an employee that doesn't have the qualifications or capacity to do the job. Yet this is, in effect, exactly what many plants do when they use maintenance paints that break down shortly after application. To be sure, a coat of paint doesn't punch a time clock or demand fringe benefits, but it does have to work twenty-four hours a day. Thus, its cost of "employment" warrants considerable attention.

In practice, it's the interval *between* paintings that really determines your cost. The longer a paint film lasts, the less it costs to use—in time, labor and material. But perhaps most important are the costs that can't be calculated—for example, production lost when facilities must be shut-down for repainting.

Here's how you can save. By reducing labor costs and production down-time, paints based on Dow Corning Silicones make important contributions to your profit picture. Silicone paints, of course, take just as long to apply as do conventional paints. And like other high quality products, they are premium priced. But once they're on, they *stay* on, and on, and on, and then your savings start to pile up.

What makes silicone-based paints the good investment they prove to be? The simple answer is—greater resistance to the many enemies that maintenance coatings must face day and night. Included on this list are heat, cold, moisture, rust, corrosion, salt spray, ozone and the many other paint-killers that assault plants and equipment.

Hot spots no trouble now. When exposed to heat that, on some stacks and mufflers, soars to 1000 F, ordinary paints crack, peel and burn away. Moisture gets in. Rust, corrosion and trouble follow fast. But not so when you're using paints made with Dow Corning silicone resins. They are at their best when the "heat's on".

Some equipment is hot on one end and cold on the other . . . silicone paints hold tight on *both* ends. Film, gloss and color retention are excellent as well. There's no unsightly chalking, fading or streaking.

Concerning color: silicone-based coatings are now available in almost any color desired. Hot-running equipment and piping can be color-coded for increased safety and efficiency. And as some refineries have learned, a plant made more colorful and attractive helps improve public relations.

Best for your products, too. Silicone paints will work just as hard for you on the products you sell. Product finishes based on silicones keep color and gloss without fading or chipping just as their maintenance-coating fellows do. They stand up longer to hard wear, heat and abuse . . . improve customer satisfaction.

It all adds up to this: paint maintenance is probably costing you a lot more than it should. In many cases, this cost can be cut in half by using silicone paints that last up to 100% longer. So every time you think about paint — for maintenance or products — consider paints based on Dow Corning Silicones. Most leading paint manufacturers now offer these longer lasting coatings . . . coatings that really protect valuable plants and equipment.

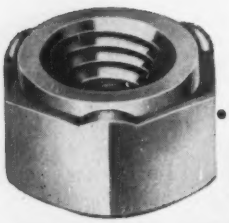
Send for your copy of "Why Silicone-Based Paints Mean Less Maintenance". Write Dept. 7416.

first in silicones

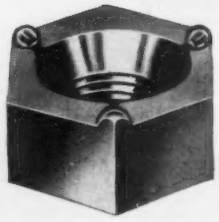
Dow Corning CORPORATION
MIDLAND, MICHIGAN

ATLANTA BOSTON CHICAGO CLEVELAND DALLAS LOS ANGELES NEW YORK WASHINGTON, D. C.

For More Facts Write No. 286 on Information Card—Page 32



These 2 GRIPCO® WELD NUTS *for blind assemblies*



provide easier positioning—quicker fastening—extra threaded depth—at less cost—engineered for various gauge metals. With 3 or 6 projections, with or without self-locking threads, these hexagon weld nuts provide a firm, non-rocking electrical connection during welding.

Write for samples and NEW catalog today, or consult the yellow pages in your phone book under "GRIPCO" for the representative nearest you.

132

WITH GRIPCO FASTENERS YOU GET:

Service—40 Sales representatives all over the country for prompt, fast service.

Reliability—Quality controlled by the oldest established lock nut manufacturer in the U.S.

Stock—Large inventories to ensure out of stock delivery on all catalogued items.

GRIP NUT COMPANY | *Subsidiary of Heli-Coil Corporation, Danbury, Conn.*

112 Maple Ave. • South Whitley, Ind. • Phone: South Whitley 723-5111

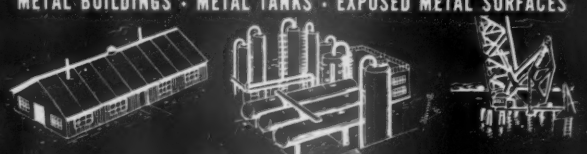
For More Facts Write No. 287 on Information Card—Page 32

LAYKOLD FIBRECOAT

Laykold Fibrecoat can cut your metal maintenance costs in half!

At less than $1* per gallon, an excellent paint for...

METAL BUILDINGS · METAL TANKS · EXPOSED METAL SURFACES



Laykold Fibrecoat, a mineral-armoured asphalt emulsion meets MilR-3472 Spec. and has successfully passed the severe Navy Salt Spray Tests. In addition, it effectively extends the life of bituminous roofs. Get all the facts. Call or write our nearest office.

**Available in black, red or green. (Green slightly higher.)*

American Bitumuls & Asphalt Company

320 MARKET ST., SAN FRANCISCO 20, CALIF.
Perth Amboy, N. J.
Baltimore 3, Md.
Cincinnati 38, Ohio
Atlanta 8, Ga.
Mobile, Ala.
St. Louis 17, Mo.
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Portland 8, Ore.
Oakland 1, Calif.
Inglewood, Calif.
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BITUMULS® Emulsified Asphalts • CHEVRON® Paving Asphalts • LAYKOLD® Asphalt Specialties • PETROLASTIC® Industrial Asphalts

For More Facts Write No. 288 on Information Card—Page 32

Better Filing Helps Cut Inventory

(*Continued from page* 182)

ing requisition such as the one used for usage items and an inventory record card. This card is 6¾ x 8 inches with space for description of the item, maximum and minimum quantities and purchase order record data.

The card lists vendors (usually local) who sell the particular item and notes other information for the buyer. The buyer writes a purchase order based on the traveling requisition, which is then returned to the file. When the items are delivered, the new total is posted on the inventory record.

You Can Tell at a Glance

The traveling requisition has a green block in the upper right hand corner of the side and a red block on the other. The color shows through a hole in the corner of the inventory record—green, signifying none on order—red, some on order. If no color shows, it means the card is out.

When the analyst spots an item getting close to minimum number on hand, a glance at the color on the inventory record tells him whether it is already on order.

In the past, inventory records were hidden in drawer files. Eight analysts were kept busy looking through the records and trying to keep stock above minimum levels. They wrote their own purchase orders and had no traveling requisition card with its price history information.

Basically, the greatest single advantage of our visible-vertical card location system is the speed with which our buyers can scan their purchase orders for close follow-up. In addition, we can keep closer tabs on our vendors and on the prices we pay for our materials. ► END

COMING
PURCHASING MAGAZINE'S ANNUAL VALUE ANALYSIS ISSUE
MAY 8, 1961

V-R INSERTS...

FIRST CHOICE of more and more plants

PUREST RAW MATERIALS enable V-R to produce the highest quality carbide grades.

MOST MODERN METHODS, such as vacuum sintering, make V-R grades better, more versatile.

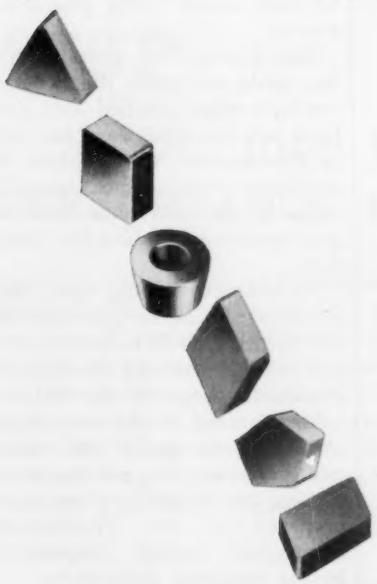
PRECISE PRODUCTION PROCESSES assure accurate shapes, sizes, grades, dimensions and densities.

CONSTANT QUALITY CONTROL guarantees consistently superior performance from V-R inserts.



Contact your V-R representative or write us today for full information on the complete line of V-R Inserts, Toolholders and Face Mill Cutters.

...V-R INSERTS...BETTER FROM START TO FINISH...



CREATING THE METALS THAT SHAPE THE FUTURE

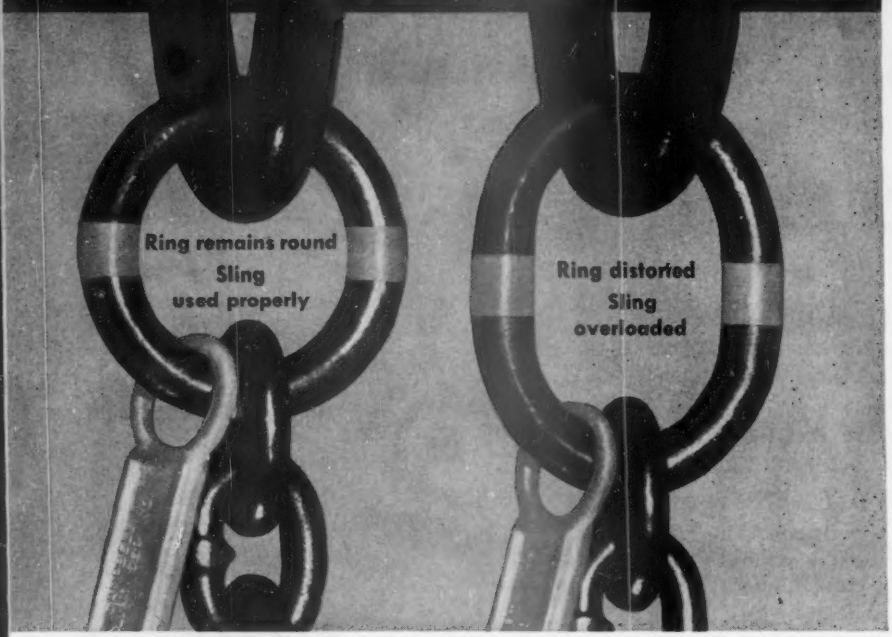
VASCOLOY-RAMET

874 MARKET STREET • WAUKEGAN, ILLINOIS

C-834

For More Facts Write No. 289 on Information Card—Page 32

The SLING CHAIN that Talks ...with the WARNING RING!



CAMPBELL SENTRY SLINGS

The **WARNING RING**† which is actually stronger than the chain itself, acts as a joiner link on Campbell **SENTRY SLINGS**. It tells you immediately when the sling has been overloaded . . . it elongates visibly . . . and before the chain itself is damaged. *Your eye can see the difference!*

New, revolutionary . . . Campbell **SENTRY SLINGS**—fully tested for over a year by foundries, steel fabricators and heavy equipment manufacturers, offer many important advantages. The **WARNING RING** changes shape as the sling is overloaded . . . *before permanent damage occurs*. Repair is quick and easy, with a new **WARNING RING** replaced at the factory. Re-tested and re-certified Sentry Slings are again ready for regular service.

Here's How You Benefit From New SENTRY SLINGS:

- Safety programs are easier to maintain — with the **WARNING RING'S** built-in safety that protects men and material!
- Lower repair costs mean greater savings for you—normally only the **WARNING RING** will need repair!
- Immediate visual evidence of overload means easier inspection—even while sling is in use!

SENTRY SLINGS, available in all types, are made from Cam-Alloy steel chain only . . . *available at no extra cost!* All carry the Campbell Guarantee and Certificate of Test.

For complete information contact your Campbell distributor or write direct.

CAMPBELL with the WARNING RING SENTRY SLING

†Pat. No. 2966878

CAMPBELL CHAIN *Company*

FACTORIES: York, Pa.; West Burlington, Iowa; Union City, Calif. ● WAREHOUSES: Medford, Mass.; Atlanta, Ga.; Dallas, Texas; Chicago, Ill.; Portland, Ore.; Seattle, Wash.; Los Angeles, Calif.

Purchasing And Manufacturing

(*Continued from page 74*)

number, follows up with the vendor's part number and monthly buying estimates. The form for off-the-shelf items lists parts numbers, purchase order numbers, and monthly usage figures.

Chilcoat emphasizes that supplier forecasts are especially beneficial in ordering products with long processing cycles. Porcelain, for example, may require from six to 12 weeks, depending on size and shape of parts. Advance warning of buying trends offers the supplier a liberal lead time cushion—but simultaneously imposes a heavier responsibility to deliver on time.

Automatic order writing at S&C begins when purchasing gets the traveling requisition from production control. A clerk pulls the appropriate purchase record card. In the pocket of this card is a tape with parts and spec data for a Flexowriter machine.

Both cards are forwarded to the buyer who reviews the buying request and assigns a vendor. The buyer can modify delivery date and change order quantity up to 10%—but beyond that point he must confer with production control.

The Flexowriter operator gets the cards and takes the assigned vendor's edge-punched data card from her file, feeds card and tape to the machine to complete the purchase order. She manually types in variable data. Chilcoat gets completed orders for signature.

To conserve typing time, S&C employs continuous purchase order forms, which include a section for the receiving department. Purchasing copy of the PO has columns in which delivery status of parts is recorded. If S&C wants multiple shipments, additional receiving report sections are tape-prepared on the Flexowriter, elminating manual preparation by the receiving department.

Despite his executive title, VP Chilcoat still buys major components, counsels his people on other items, and is the prime mover of S&C's vendor relations program. ► END

For More Facts Write No. 290
←on Information Card—Page 32



STST*

*Superior Tool Steel Tubing

ODDS: 1000 TO 1 TO CUT COSTS, IMPROVE PERFORMANCE IN 1001 DIFFERENT APPLICATIONS

Superior tool steel tubing is an excellent material for tools, but equally good for 1001 other applications. Odds are that it will cut costs and improve performance wherever it is used. Type E-52100, an oil hardening grade of high-carbon and chromium alloy steel, has been widely used for such diverse applications as thread guides on hosiery knitting machines, nylon yarn guides, ball bearing races, nozzles for blast cleaning equipment, gear and pinion parts, dental instruments and extrusion mandrels. Type E-1095, a high-carbon steel tubing, is serving as applicators for jewelers' oilers, leather and paper punches, and surgical instruments.

Perhaps you have an application that can benefit from high strength and hardness, good wear resistance, abrasion resistance, shock resistance, and notch toughness. In that case, consider Superior tool steel tubing before you go any farther. It could give you a better product at a lower cost. Send for Data Memorandum #14, a handy guide to your thinking. Superior Tube Company, 2034 Germantown Ave., Norristown, Pa.

Steel

Superior Tube

The big name in small tubing

NORRISTOWN, PA.

All analyses .010 in. to ⅝ in. OD—certain analyses in light walls up to 2½ in. OD

West Coast: Pacific Tube Company, Los Angeles, California • FIRST STEEL TUBE MILL IN THE WEST

For More Facts Write No. 291 on Information Card—Page 32

Plastic heat deflector



Custom molded by CMPC

APPLICATION: 26-inch compression molded heat deflector for General Electric Mark 27 built-in range. Diverts oven heat from control panel—helps to insure longer, trouble-free life.

ADVANTAGES: The CMPC-molded phenolic part has a top continuous use temperature rating of 400 degrees F—comparable to many metals. In addition, because its satin-smooth finish is *built-in*, it requires no additional expensive machining.

Specify CMPC . . . custom plastic molders for over 40 years.

CMPC CHICAGO MOLDED PRODUCTS CORPORATION

1020-J N. KOLMAR AVE. CHICAGO 51, ILLINOIS

The Facts About Executive Tension

(*Continued from page* 82)

over-tensed person. It's an established fact that physical fitness makes it easier to cope with tensions.

For a person to get at the cause of his tensions takes a lot of soul searching. To be able to cope with the problem, he first has to find out what it is that's creating the stress in his life. It helps considerably to be able to talk out the problem with someone — a psychiatrist, clergyman, his wife, or a friend. Naturally, the specific causes of stress are myriad. There are as many variations as there are people, but some of the more common problems for executives are:

The trend of modern business to "groupthink" whereby the executive tries to get things done through others rather than by being the arbitrary boss. Another phase of today's business that can create tension is the improvement in communications. So much more information is available, and there are so many more facts to consider — frequently contradictory facts—that decision-making can become more and more of a problem.

Failure to meet job responsibilities can be another tension provoker. An executive may be able to give others the impression that he is on top of the job, but if he feels inside that he is not doing his part, insecurity tensions are inevitable. In the same way the executive who takes his briefcase on the roundtrip from office to home without opening it may well suffer guilt feelings.

Don't Shelve the Problem

Repression of fear and anger is another common cause of tension. In the same category is the repression which takes the form of trying to ignore problems. Attempting to hide a problem is usually much more emotionally disturbing than the worry that results from trying to solve it.

Some executives between 45 and 60 face the problem of the male climacteric, or change of age group to suddenly feel

(*Please turn to page* 190)

Let SUN SHIP solve your machine problem

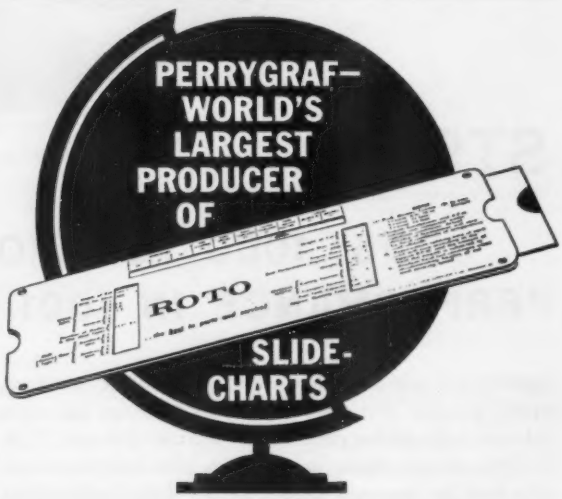
When you need machine work or specially built machinery of any kind, you'll find Sun Ship qualified to do the job exactly to your specifications. We have machine tools of every size, and the facilities and skills born of long experience.

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SALES ENGINEERING DEPARTMENT

Sun SHIPBUILDING & DRY DOCK COMPANY
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Technical Procurement Data

WINSMITH SPEED REDUCERS

HOLLOW SHAFT WORM GEAR SPEED REDUCERS

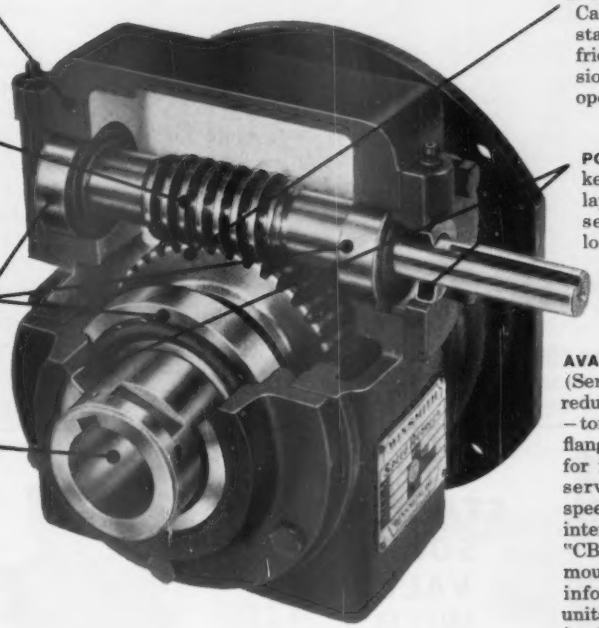
single and double reduction . . . torque arm and flange mounted models

CAST IRON HOUSINGS designed for high heat radiation. One-piece construction, close-grained gray iron for maximum strength and rigidity.

CASE-HARDENED STEEL WORMS cut integral with the shaft. Heat treated for close-grained tough core, carburized and hardened before grinding. Meet AGMA long-wear specifications.

TAPERED ROLLER BEARINGS for minimum maintenance, long bearing life and permanent shaft alignment. High radial and thrust load capacity.

HOLLOW SLOW SPEED SHAFTS in wide range of standard bore sizes and keyways. Mounts on shaft of driven machine *without bushings*—two external slots facilitate removal with standard wheel puller.



SPECIAL BRONZE WORM GEARS Cast to recommended AGMA standards. Low coefficients of friction and thermal expansion for cooler, more efficient operation.

POSITIVE OIL SEALS keep oil in, dirt out. Shafts lapped to micro-finish under seals for uniform contact, longer seal life.

AVAILABLE in single reduction (Series ST and SF) and double reduction (Series STD and SFD) —torque arm ("T" models) and flange mounted ("F" models)— for intermittent or continuous service. Hollow shaft slow speed assembly of "ST" series interchangeable with Winsmith "CB" and "CT" Series with foot mounted housings. For further information on these latter units, write Winsmith Engineering Department.

- *12 Models*
- *.041 to 8.82 H.P.*
- *Ratios 7½:1 to 4466:1*
- *Max. Output Torque 816 to 7678 in. lbs.*

Winsmith Hollow Shaft Speed Reducers cover a broad range of power transmission requirements for both single and double reduction drives. *Their worm gearing provides much higher reduction ratios than are possible in comparable size units using other types of gearing.* Winsmith Hollow Shaft models are designed for all applications where it is advantageous to mount the reducer on the shaft of the driven machine. They are compact, easy to install and require less space than conventional units. Their design and construction provide high shock load resistance; maximum thermal capacity without induced cooling; greater overhung capacity; and a high degree of standardization which eliminates excessive special application engineering.

Write today for complete information or call your nearest Winsmith Representative listed in the Yellow Pages. He is a technically trained expert who is always ready to help you with any speed reducer problem. For both standard and special power transmission applications, you'll find it pays to standardize on Winsmith.

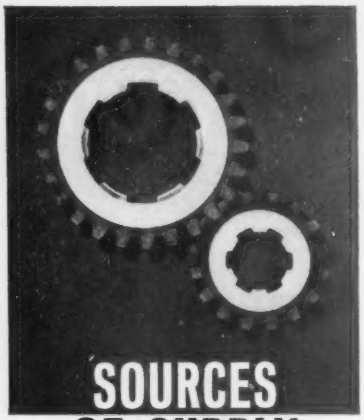
WINSMITH, INC.

225 Eaton Street, Springville, (Erie County), New York

MEMBER OF AGMA

• • • Winsmith Speed Reducers are made by American craftsmen to meet American design and production standards.

For More Facts Write No. 294 on Information Card—Page 32



SOURCES OF SUPPLY

Suppliers and sub-contractors in the Northern Plains can be pinpointed quickly by the Facilities Register, a unique electronic index of production facilities. Whether yours is a problem of finding new suppliers, contracting for idle machine time, shortening lines of supply, or obtaining better quality and service:



NORTHERN NATURAL GAS COMPANY
SERVING THE NORTHERN PLAINS ☐ GENERAL OFFICES: OMAHA, NEBRASKA
Write No. 256 on Information Card—Page 32

The Facts About Executive Tension

(*Continued from page* 188)

that they are running out of time. Their children are growing up, they find that only older women are interested in them. For many men the realization that a good part of their life is behind them can be an extremely painful experience. And so is the thought of retirement.

Another common problem that may harass the tension-prone older executive is the change he has to make in his thinking. On the way up, a man has to be wary of his competition. But once he has arrived he is expected to develop subordinates who will eventually be able to fil. his job. This is an adjustment that many men cannot make.

The Lonely Pinnacle

Also success-related is the problem resulting from the fact that the higher you go, the more you have to make decisions on your own. There are fewer people whom you can ask for guidance, and there are more seeking guidance from you.

For some men this is an exhilarating experience. As one company president expressed it: "All you hear about how tough it is to be president is bunk. There's real joy in being the boss." But for many others the repsonsibility and the increased loneliness that come with promotions can be a source of stress.

You're Not Indispensable

It is essential for the tensed-up executive to realize that there is no real peace of mind. Problems are inevitable, but for the most part they fall in two categories: those that you can do something about and those that you can't.

A necessary part of the adjustment the chronically nervous executive must make is to realize that he is not indispensable. He must learn to delegate. He must develop a more objective view of himself, not take himself too seriously. He must learn to relax. Vacations are a must, and it's usually better to take several

(*Please turn to page* 192)



STANDARD SOLENOID VALVES WITH CUSTOM FLEXIBILITY

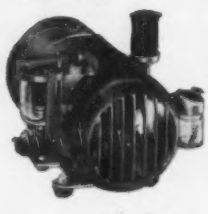
Skinner's V5, X5 series of two-way and three-way solenoid valves has earned the description—"The Universal Line." With more than 100,000 variations possible, V5, X5 valves are available for every conceivable application. And top quality is emphasized. Bubbletight sealing throughout, stainless steel body, plunger and sleeve assembly, precision machining, unique welding techniques, specially designed and developed machinery and manufacturing methods are all used by Skinner to produce the best valves made. These valves are small, yet handle operating pressures as high as 3000 psi. They accommodate all media that are compatible with stainless steel. No other solenoid valves offer so many optional features.

For complete information contact a Skinner Representative listed in the Yellow Pages, or write us at Dep't. 604.

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THE CREST OF QUALITY
SKINNER ELECTRIC VALVE DIVISION
SKINNER PRECISION INDUSTRIES, INC. • NEW BRITAIN, CONNECTICUT, U.S.A.

For More Facts Write No. 295 on Information Card—Page 32

Model 0321



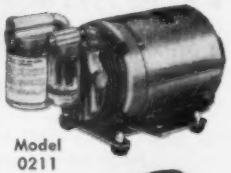
Model 0521



GAST rotary vane AIR PUMPS

— Vacuum or Pressure —

- Four sizes—Built-in motors
- Compact, portable, reliable
- For O.E.M., plant or lab use



Model 0211

To reduce weight, save space and cut costs—use Gast Integral-Motor-Pump Models! Fitted for vacuum—or as air compressors. For oil-free air, some offered with oil-less construction. Very compact and dependable. Positive displacement.
Used as original equipment on instruments, test units, etc. Capacity from ½ to 3.8 cfm; to 28" vacuum or to 25 psi.



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GAST ROTARY
"Air may be your answer!"
• AIR MOTORS TO 7 H.P.
• COMPRESSORS TO 30 P.S.I.
• VACUUM PUMPS TO 28 IN.

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Look for the label that assures weather resistance... high strength...pleasing appearance

This label on a glass-fiber reinforced panel is your assurance of *unmatched weatherability*. It appears only on panels made with PARAPLEX P-444 acrylic-polyester resin. Extensive laboratory and field tests have proved that the proper combination of acrylic and polyester resins produces the *best* weather resistance in reinforced panels. This combination is found only in PARAPLEX P-444, made by Rohm & Haas. The resin also imparts pleasing appearance, high strength, excellent light transmission, and ease of installation. Write for the names of panel manufacturers who use PARAPLEX P-444.

Chemicals for Industry

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PARAPLEX *is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.*

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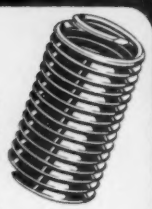
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3 WAYS TO PERMANENT THREADS
– IN ANY MATERIAL!



For original design — production salvage and "on-the-job" thread repairs — use *Heli-Coil*® Stainless Steel Wire Screw Thread Inserts.

HELI-COIL Standard Insert
for stronger, smoother, lifetime threads



Permanently protects threads against wear, stripping, corrosion, galling, seizing, vibration, and shock. Made of 18-8 stainless steel wire, this precision-formed *Heli-Coil* Insert has a tensile strength of approximately 200,000 psi. Conforms to military standards and all commercial and industrial thread forms.

HELI-COIL Screw-Lock Insert
eliminates lock wiring and lock nuts



This one-piece wire Screw-Lock Insert provides all the thread protection of the Screw-Thread Insert, PLUS an exclusive resilient *internal* locking feature that eliminates clumsy protruding lock nuts, lock wiring and other supplementary locking devices. It saves cost, space and weight – permits simple streamlined design in standard bosses. Meets military and N.A.S. specifications for locking torque and vibration.

HELI-COIL Shop-pack
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Contains everything needed for fast, easy thread repair – *on the spot!* Salvage expensive parts – for pennies! Shop Pack restores threads to original size. Available in U.N.F. and U.N.C. sizes 6-32 to 1½-6. There's a kit for spark plug and pipe thread sizes, too. Each Shop Pack contains a supply of *Heli-Coil* Screw-Thread Inserts with special tap plus inserting tool.

There is a *complete* line of *Heli-Coil* products for every thread need: inserts, taps, tools and gages. Let us help with your design and application problems. Write today for complete information.

HELI-COIL CORPORATION
4304 Shelter Rock Lane, Danbury, Connecticut

For More Facts Write No. 298 on Information Card—Page 32

The Facts About Executive Tension

(*Continued from page* 190)

short ones rather than one long one.

The pressure-prone executive must develop outside interests. The man who is completely job-oriented has nothing to fall back on if something goes wrong at work. That's why hobbies are excellent therapy, particularly if they are non-competitive or at least if they can be viewed in perspective so that you don't feel compelled to win.

Relax for a While

Physical exertion is extremely helpful when tensions build up. But sometimes it's best to loaf—to put problems off until tomorrow, so long as you eventually worry the problem to a conclusion. Escape can help at critical moments too. See a movie, read a book, contemplate. (Connecticut General Life Insurance Co. has even gone so far as to set aside a "cooling off" room where employees can just sit in peace and quiet whenever they feel their tensions building up). And finally, as one physician recommends, "Stop taking your pulse and get back to work." ► END

COMING

PURCHASING MAGAZINE'S ANNUAL VALUE ANALYSIS ISSUE

Over 300 actual case histories of applied value analysis. Also, the first detailed study of General Electric's unique approaches to value buying.

WATCH FOR IT

MAY 8



National O-Rings are precision made, uniform industrial rings available throughout the United States—promptly! Quality is superior; all ingredients are inspected before compounding and compounding is strictly controlled for maximum uniformity. Molding is done on modern equipment by veterans of 20 years in O-Ring manufacture. Every precaution is taken to insure that no O-Rings with cuts, scratches or mold defects are shipped.

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AMhurst 2-6971

5600-R

For More Facts Write No. 299 on Information Card—Page 32

Lower Freight Rates— But Are They Legal?

(*Continued from page 79*)

the fact that they can show their managements substantial savings in freight charges. They are not interested in the management of the association they belong to.

Unofficially, the regulated freight forwarder is not at all pleased with the existence of legitimate shipping associations, either. Legal or illegal, they are taking money away from him. Yet, the regulated freight forwarder recognizes that non-profit shipping associations are within the law. He also is aware that some of the members of such associations are among his biggest customers on "non-association" shipments. Therefore, the most diplomatic thing to do is to "talk softly" where the legitimate association is concerned.

Recently, others have joined the regulated freight forwarder in expressing concern over the operations of illegal shipper associations. The Advisory Committee of the Regular Common Carrier Conference of the American Trucking Associations plans to "root out and destroy illegal shipper associations that actually are subterfuges for transporting without having obtained I. C. C. operating rights".

The Commerce & Industry Association of New York, representing 4,000 member companies, has set up a subcommittee to investigate their operations in the New York Area.

Profits Going Down

What worries regulated freight forwarders is their falling revenue and declining profits. For example, the 63 regulated forwarders having gross revenues of $100,000 or more per year reported to the I. C. C. a net income for the six months ending June 1960 of $475,516 compared with $1,715,641 for the same period in 1959. Twenty-six of the companies reported a net loss. During the full year 1957, 56 companies reported a total net income of $4,220,220,

(*Please turn to page 196*)



Yes. It's a special kind. It stands for the Lee Uniform. The uniform that's designed to inject energy into your business. To spark morale. To add exciting new zing to overall efficiency.

Key management everywhere has discovered that Lee Industrial Workwear and Uniforms are an investment that pays large dividends in utility, safety, long wear, comfort and good looks. And please note. The Lee line is the largest in the industry. It includes Shirts and Pants, Jackets, Union-Alls, Service Coats, and many others. Includes custom garments made to your specifications too! No matter what the job, there's a Lee to fit it perfectly... and economically!

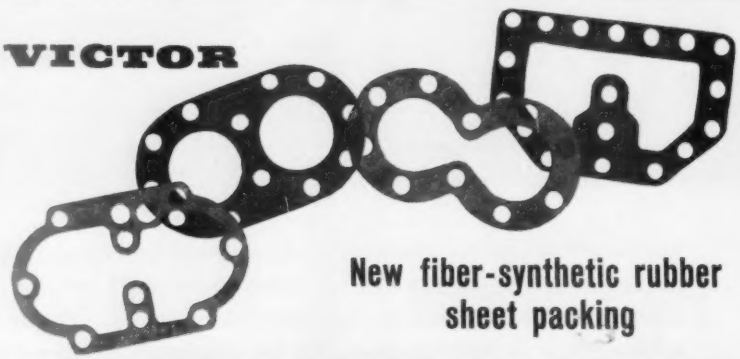
Call in an experienced Lee Consultant. Get the proven facts on the garments best suited to your needs. You'll find it's worth your while to let Lee work for you!

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Lee

For More Facts Write No. 300 on Information Card—Page 32

VICTOR



New fiber-synthetic rubber sheet packing

VICTOLEX®

FREE test sheets and technical data

VICTOLEX is a new multipurpose sheet packing developed from a blend of cellulose fiber and synthetic rubber. In toughness, strength and resiliency, it beats ordinary glue-glycerin treated paper packing. Victolex has good dimensional stability — won't shrink, stretch, dry out or break down under pressure or heat—and has excellent sealing characteristics for oil, fuel, antifreeze and water. Victolex is available in gaskets cut to your specifications or in rolls, in four thicknesses. Choose from ten grades, all conforming to the new SAE-ASTM specifications. Test samples supplied free. Please state proposed application; recommendations made if desired.



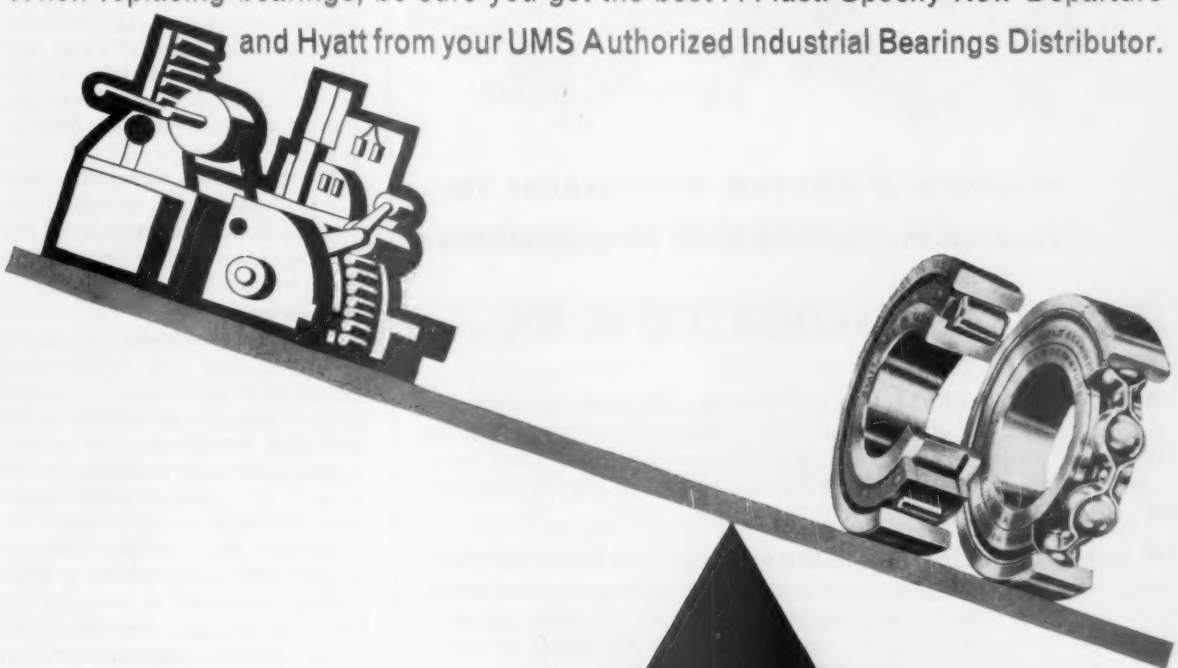
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GASKETS • PACKINGS • OIL SEALS • MECHANICAL SEALS

For More Facts Write No. 301 on Information Card—Page 32

KEEPING PRODUCTION UP . . . New Departure ball bearings and Hyatt roller bearings keep the line moving and help you cut costs and maintenance on the machinery in your plant. Manufactured to precision tolerances of millionths of an inch, their outstanding performance and reliability is why nearly 30,000 original equipment customers specify New Departure and Hyatt . . . why these bearings are found on virtually every type of industrial equipment in use today. Together, New Departure and Hyatt are the world's largest manufacturer of precision bearings. Their durable high-quality precision bearings are readily available to you through the national network of New Departure-Hyatt Industrial Bearings Distributors, who are backed up by United Motors Service bearings warehouses across the country. When replacing bearings, be sure you get the best . . . fast. Specify New Departure and Hyatt from your UMS Authorized Industrial Bearings Distributor.



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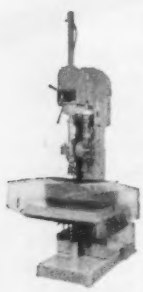


THERE'S A BETTER APPROACH TO PLANT MAINTENANCE OPERATIONS!

Seriously, many a shop is performing maintenance metalworking operations the hard way. Below are two suggestions to help break this bottleneck present in many a factory:

'BUFFALO' UNIVERSAL IRON WORKER — the all-in-one metal fabrication machine that cuts, punches, miters, shears, slits, copes and notches all standard metal shapes without changing tools — does all standard operations in the time and space usually required by 6 single-purpose machines. Write for Bulletin 322.

'BUFFALO' DRILLING MACHINES such as this well-known "RPMster" which adjusts so rapidly that it performs job drilling at production speeds. 1001 instantly adjustable spindle speeds mean real setup time savings on hundreds of varied jobs during an 8-hour shift. Quality 'Buffalo' ball bearing spindles mean accurate work. This machine — and a dozen other types of 'Buffalo' Drills — are paying their way in every type of production and maintenance drilling operation. Write for 'Buffalo' Bulletins covering the type of work you do. Remember — the P. A. has a major role in channeling money-saving ideas to all departments.



See 'Buffalo' Machine Tools in Operation . . .
MACHINE TOOL SHOW—Booth 551

MACHINE TOOL DIVISION
BUFFALO FORGE COMPANY
Buffalo, New York
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

ESTABLISHED 1877 "Buffalo" MEMBER N.M.T.B.A.


Buffalo air handling equipment to move, heat, cool, dehumidify and clean air and other gases.


Buffalo Centrifugal Pumps to handle most liquids and slurries under a variety of conditions.


Buffalo Machine Tools to drill, punch, shear, bend, slit, notch and cope for production or plant maintenance.


Squier machinery to process sugar cane, coffee and rice. Special processing machinery for chemicals.

For More Facts Write No. 303 on Information Card—Page 32

Lower Freight Rates— But Are They Legal?

(*Continued from page 194*)

with 13 companies indicating a loss.

The Interstate Commerce Commission smells something fishy in the growth of shipper associations. It has a number of them under investigation. Last October the Commission found one shipper association to be unlawful and ordered it to "cease and desist" illegal operations as a freight forwarder. I. C. C. examiners have recommended cease and desist orders in at least three other cases in recent months. Yet, with an estimated 250 to 300 associations, the I. C. C.'s enforcement problem is tremendous, particularly since it may take months to conduct an adequate investigation of any one shipper association.

Further, since non-profit shipper associations are exempt from regulation, some have claimed the I. C. C. has no right to examine their records.

P.A. Beware

Although they offer dramatic freight savings, the P. A.'s who are considering forming or joining shipper associations should be on the alert. Membership in an association certainly cannot solve all of a P. A.'s transportation problems. To begin with, shipper associations offer service between larger cities only, where a substantial amount of tonnage is available. Stephen Tinghitella, Director of Transportation for the Commerce and Industry Association of New York estimates that at least one carload of freight should be available from among the members each week. Otherwise, delayed shipments and loss of customer good will may wash out any freight saving advantages. Yet, many shipper association members feel that a day or two delay is not too long to wait for a shipment to take advantage of the freight savings.

George Gwinup of the Rubber Manufacturers Association, which operates a very successful shipper association, stated that association freight may take two or three days longer to deliver than nor-

mal carload freight. However, his members are aware of that delay and make allowances or use other means of transportation in the case of rush shipments.

A P.A. should investigate a shipper association he is contemplating joining. As stated above, to operate legally the shipping association must be a nonprofit organization. As a member of such an association, the P.A. would, by law, have to take part in and be familiar with the association's management. Absence of member interest in its management is one of the signs of an "illegal" shipper association.

Didn't Foot the Bill

Many promoters have entered the field. There have been cases where they have skipped town owing railroads for freight charges. Association members have had to absorb the loss. Recently the Interstate Commerce Commission was asked for help by a California shipper. He wanted to get his freight from a Baltimore warehouse that was holding it to force a so-called shipper association to pay back charges. The shipper had paid the freight charges in advance in California. The I. C. C. explained that they were sympathetic but powerless to help, since the shipper association was not subject to the Interstate Commerce Act.

When asked for advice to a potential member of a shipper association, Anthony Chiusano said he could sum it up in one word "Beware".

'Extra' Items Not Quoted

The freight forwarder industry points out that the so called "dramatic" savings may not be so dramatic at all. They claim that the average shipper association member does not include all of his actual costs in computing his freight charges. Items such as the salary of extra traffic clerks in the shipper's traffic department, the time of members spent on shipper-association business, and the extra paper work involved in filing loss and damage claims are normally not included in an assessment of member transportation costs.

(*Please turn to page* 200)



Today, STIRRING the air IS NOT ENOUGH!

There isn't much ventilation value in stirring the same sleepy air round and round! 'Buffalo' Package Roof Ventilators **exhaust** this stale, tired air — maintain a healthy, invigorating atmosphere at all times, in large plant areas.

Overall cost is moderate, too. These 'Buffalo' package units are delivered ready for fast, low-cost installation. Operation is extremely economical, thanks to the high efficiency, ease of maintenance and long life built into every 'Buffalo' Fan.

'Buffalo' also builds fans and conditioning cabinets for every heating and ventilating need in plant and office. Write us about your problem today!



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AIR HANDLING DIVISION
BUFFALO FORGE COMPANY
Buffalo, New York
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.



Buffalo air handling equipment to move, heat, cool, dehumidify and clean air and other gases.



Buffalo Machine Tools to drill, punch, shear, bend, slit, notch and cope for production or plant maintenance.



Buffalo Centrifugal Pumps to handle most liquids and slurries under a variety of conditions.



Squier machinery to process sugar cane, coffee and rice. Special processing machinery for chemicals.

For More Facts Write No. 304 on Information Card—Page 32

SANDVIK

INTEGRAL BAND SPRINGS*

ELIMINATE HOLDER



CUT HANDLING and SHIPPING COSTS

They are **Self-Contained** by the two outer convolutions of the spring which are fastened together.

NO HOLDER TO HANDLE OR RETURN. LOWER WEIGHT CUTS SHIPPING COSTS.

Other advantages—

- **Safer, easier to install; both originally and replacement.**
- **Permits using different sizes of springs in same housing for different requirements.**
- **Better, smoother spring action because "binding" friction is minimized; torque is more uniform.**

For further details on the size you require, write or phone your nearest Sandvik office. For general information on these and other Sandvik Power Springs send for our new 12-page catalog.

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SS-258

For More Facts Write No. 305 on Information Card—Page 32

Here's How To Handle

FLAMMABLE SOLVENTS

with Production-Line Efficiency and Maximum Safety...

SWABBING & SMALL PARTS CLEANING

Plunger Can



For quick, one-hand moistening of swab, brush or cloth. Depressing spring loaded dasher pumps measured quantity of fluid into cup. Release and excess drains back into can. 5 sizes—dashers 1 to 7" dia. FM approval*.

Bench Parts Washer



Keeps workers hands out of solvent. Removable parts basket has handle. Depress spring mounted fire baffle dasher for solvent, release to drain. Without basket, large cloths or swabs may be saturated. 3 pint capacity. Basket and dasher—5⅝" dia. FM approval*.

WASHING & CLEANING OPERATIONS

Wash Tank



Two handled perforated basket for fast, easy parts agitation. Self-draining by resting basket on lugs at top of tank. Renewable fusible link melts at 160° F, automatically drops cover to snuff out fire. 4 sizes ranging from 8½"x 8½"x9¾" to 15"x15"x15". FM approval*.

Air-Matic Parts Washer



Air Motor moves basket thru solvent, automatically cleans parts while machine operator continues production. Fusible link drops cover automatically to snuff out fire. Operates on 25-50 p.s.i. air. Size 15"x 15"x21". FM approval*.

Foot Treadle Dip Tank



Work-high dip tank with self-closing cover operated by foot treadle. Designed for washing large parts. Safety air check cushions accidental fall of cover. 24¾" long x 13" wide and 8¾" deep. FM approval*.

Machine Bench Can



Attaches to bench alongside of machine. Operator cleans and rinses parts by depressing fire protective metal dasher. Size 10"x7"x8". FM approval*.

Swab Can with Reservoir



For applications where large quantities of solvent are required. Supply tank mounted on common base with applicator can. Valve permits operator to replenish liquid supply at bench. Perforated metal fire baffle dasher. 2 sizes —1 gal. and 5 gal. capacity. FM aproval*.

LOOKING FOR MONEY-SAVING IDEAS



Protectoseal Catalog has many time and labor-saving suggestions for handling flammable solvents in production applications. Sent without obligation.

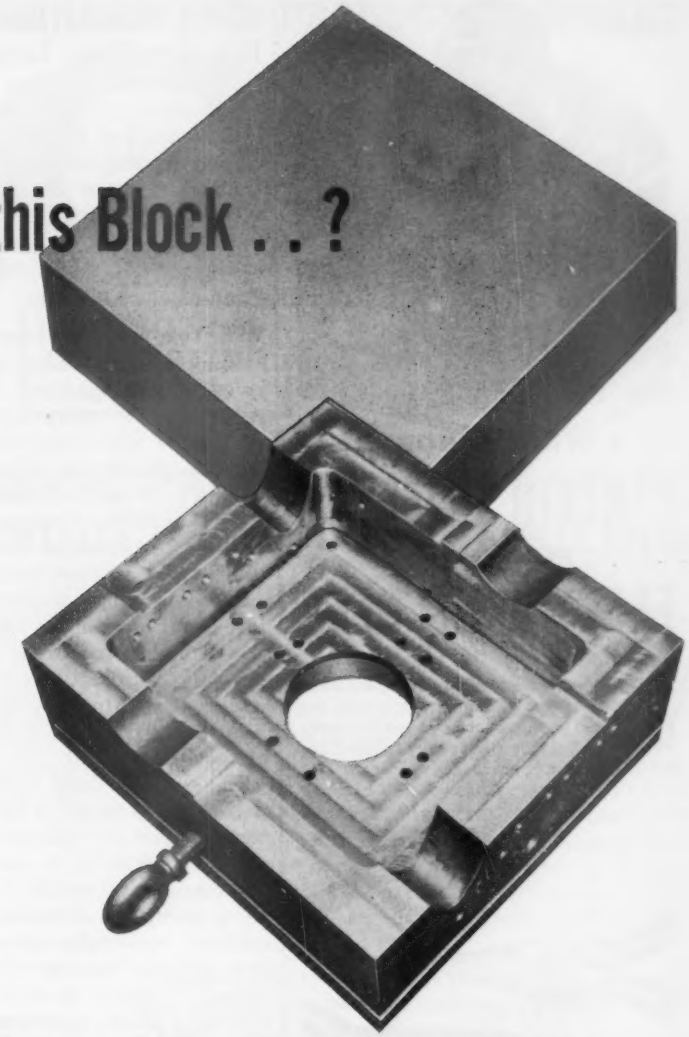
**Factory Mutual Laboratory approval*

THE PROTECTOSEAL COMPANY

1908 South Western Avenue, Chicago 8, Illinois

For More Facts Write No. 306 on Information Card—Page 32

Why start with this Block . . ?



When you can use A-L cast-to-shape tool steel

and save $1,250 on the finished job!

Here's how a manufacturer of automobile horns saves $1,250 on this die retainer or holding block by specifying an Allegheny Ludlum Cast-to-Shape tool steel, prehardened to specifications

The block contains 1250 pounds of expensive alloy steel. Also 150 hours of machining time at a cost of $1,000 are needed to fabricate it into a die retainer.

The Cast-To-Shape tool steel weighs only 650 pounds—a $250 savings in metal that would have ended up on the floor as chips. With only ¼" to ⅜" of surplus stock on its surface, Cast-To-Shape tool steel requires one roughing and one finishing operation to complete the job.

The estimated total savings by using Allegheny Ludlum Cast-To-Shape tooling, including the extra for pattern cost, amounts to $1,250.

Allegheny Ludlum Cast-To-Shape tool steel castings are available in a full range of grades. There's one to fit your needs. Write for booklet FC-4. It's free.

The new edition contains 28-pages of technical discussion on A-L's Forging and Casting Division with applications, pattern information, design tips, analyses and heat treating instructions.

The booklet also covers details of the *flat forgings* of tool, SAE and stainless steels available from the Forging and Casting Division plus information on cost-cutting *Composite Dies*.

To find out how you can cut costs on complex tools, using F & C products, call your nearest A-L Tool Steel representative or write *Allegheny Ludlum Steel Corporation, Forging & Casting Division, Ferndale, Detroit 20, Mich. Address Dept. P-4.*

ALLEGHENY LUDLUM
FORGING AND CASTING DIVISION

3097

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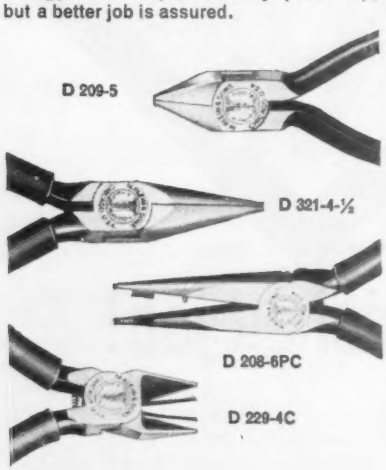
A WIDE RANGE OF

KLEIN PLIERS

FOR EVERY

ELECTRONIC NEED

Every wiring job demands a plier specifically designed for that particular service. In the Klein line is a plier exactly suited for every wiring job. Not only is assembly speeded up, but a better job is assured.



Shown here are a few of the many electronic pliers available in the complete Klein line.

CATALOG FREE ON REQUEST. Write for Catalog 103-A illustrating and describing the complete line of Klein Pliers.



ASK YOUR SUPPLIER

Foreign Distributor: International Standard Electric Corp., New York

Mathias KLEIN & Sons
Established 1857 — Chicago, Ill. U.S.A.
7200 McCORMICK ROAD, CHICAGO 45, ILL.

For More Facts Write No. 308 on Information Card—Page 32

Lower Freight Rates— But Are They Legal?

(*Continued from page* 197)

Regulated freight forwarders also claim that the shipper association handle only the "cream" traffic and leave the balance to the regulated carrier. So rates must inevitably be increased to absorb the cost of handling the more expensive traffic.

Will You Gain or Lose?

Shipper associations have arrived on the transport scene. P. A.'s should be aware of them and be familar with their advantages and disadvantages. Shipper associations have helped many P. A.'s cut their transportation costs. Likewise, some P.A.'s have had to pay for not investigating such associations thoroughly before joining them. As long as the non-profit associations remain exempt from regulation, P. A.'s will continue to have an opportunity to make sizable reductions in their freight bill.

One way to help insure they will remain exempt is by making certain that the association you join is operating in compliance with the law. Basically, it should be a group of shippers (or receivers) of freight with a common problem who are joining together to solve it. Any excess over and above expenses should in some traffic promoter's pocket. be distributed to the members. The excess should not wind up in some traffic promoter's pocket.

► END



" . . . The computers are just to supplement purchasing skills, Farmsworth. They can't do everything by themselves ! ! "

FOR REQUIREMENTS FROM .010" TO .000125" THIN IN

BRASS
COPPER
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For More Facts Write No. 309 on Information Card—Page 32

NOW AVAILABLE TO DESIGNERS AND PRODUCT PLANNERS

*PDCS

***PROTOTYPE DIE CASTING SERVICE**

A NEW PROCESS WHICH PROVIDES PROTOTYPE DIE CASTINGS WITHOUT HIGH COST TOOLING

What is PDCS?

Prototype Die Casting Service is a refinement and perfection of a plaster mold casting process which has been developed over a period of a year and a half of intensive research and test to a point which allows the low cost creation of simulated die castings, in small quantities, without the cost of conventional, permanent tooling. A Prototype Die Casting looks, feels, finishes and performs remarkably similar to a production die casting.

Why Was PDCS Developed?

The growing demands of designers, product planners, purchasing officials and sales management personnel prompted Newton-New Haven Company's development of the process. While the individual needs of all were different, the basic need behind them all was identical . . . a production method which would allow them to secure . . . each for their own reasons . . . small, low cost quantities of simulated die castings without underwriting permanent tooling charges.

How Can You Use PDCS?

If part of the product you are planning is to be a die casting and your customer requests samples before placing orders, PDCS can represent the solution to your problem. Or, if you wish to test the function of an assembly which includes a die casting . . . determine the strength of a die casting as applied to your needs . . . gauge the sales appeal of your product by sampling . . . judge the "feel" and appearance of a die casting . . . PDCS provides the means. If you are interested in holding down the cost of new product development and avoiding expensive design errors it will pay you to fill out the coupon in this announcement and mail it today as a first step in learning more about PDCS.

How Much Does PDCS Cost?

Very little compared to the advantages and cost savings PDCS can achieve for you. The factors determining cost are shape and complexity of the part as well as the quantity required.

How Can You Start To Work With PDCS?

If you have a part in design to which you believe PDCS may provide an answer and you have prints of the part to be Prototype Die Cast, forward the prints with an indication of the quantities you will require. A cost-estimate will be sent to you. Should you have a model of the part, but no prints, the model may be sent in for cost-estimating purposes. If you have just an idea about the part and not prints, sketches or models, a Newton-New Haven Technical Representative will call on you and assist in the development of drawings sufficient for cost-estimation.

From your prints, models, sketches or ideas, if part of your product is to be a die casting . . . start with PDCS

* *This name identifies an exclusive service of the Newton-New Haven Company, developed to serve the needs of Designers, Product Planners and others in industry interested in die castings as the quality method of mass production.*

THE NEWTON-NEW HAVEN CO.
680 THIRD AVENUE • WEST HAVEN, CONN.
CUSTOM PRODUCERS OF DIE CASTINGS

I have a problem to which PDCS may be the solution. Without cost or obligation to me or my company . . .

☐ Models ☐ Prints ☐ Sketches are being forwarded under separate cover. Please submit your cost-estimate.
☐ Have your representative call.
☐ Send me your free folder, "PDCS . . . Prelude to Production".

NAME:_____
TITLE:_____
COMPANY:_____
ADDRESS:_____

DIE CASTING RESEARCH FOUNDATION PARTICIPANT

NEWTON NEW HAVEN

For More Facts Write No. 310 on Information Card—Page 32

THE DRILL SARGE

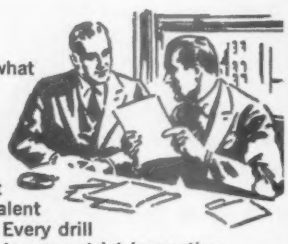


...LAYS IT ON THE LINE CONCERNING

NEW YORK TWIST DRILLS

Q: *Do you manufacture your own drills?*

A: *YOU BET WE DO! Every New York Twist Drill is made in our own modern plant at Westbury, New York*



Q: Well, how about quality? We have to know for sure what we're buying.

A: QUALITY IS TOPS! New York is a specialist in twist drills. We've got the latest equipment, the finest facilities, top engineering talent and the right "know-how." Every drill that leaves the factory has to pass strict inspection.

Q: But how do we know they're good?

A: NEW YORK TWIST DRILLS are used by leading companies from coast to coast. We guarantee them to be the equal—at least — of the finest drills made anywhere.

Q: Can I buy your drills from my local distributor?

A: NO. NEW YORK DRILLS ARE SOLD DIRECT TO YOU, THE CONSUMER, AND WE SAVE YOU 25% ON YOUR TWIST DRILL BILL.

Q: How about delivery?

A: No problem at all. We carry large stocks of standard catalog items and many semi-specials in our New York, Chicago and Los Angeles warehouses. Specials are delivered in three to four weeks.

Q: What kind of service can we expect?

A: THE BEST! Our reps are qualified men and our engineering department at Westbury continually develops new types of drills for use with the new high tensile metals.



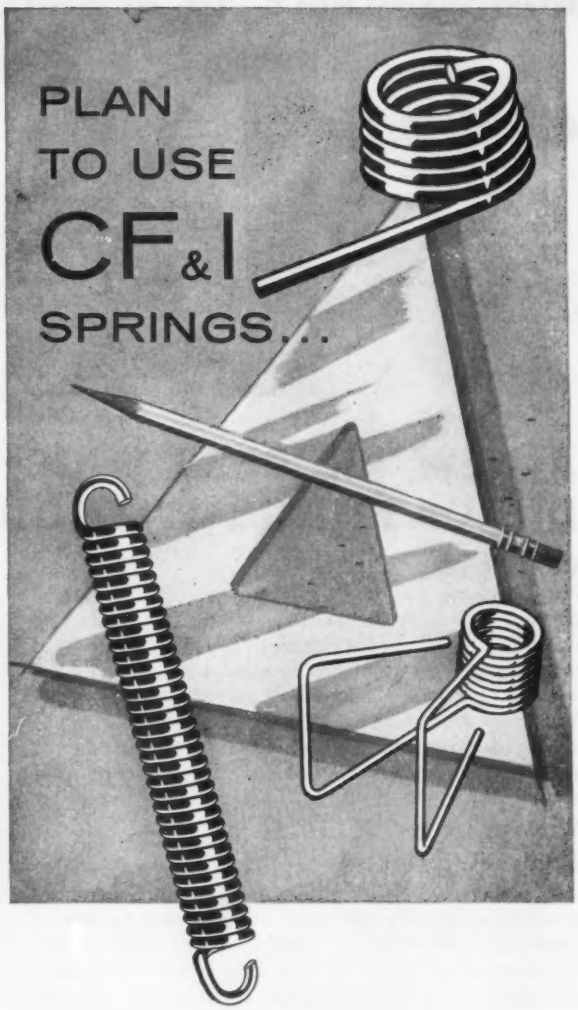
LOOK . . . NEW YORK TWIST DRILLS CUT BETTER, LAST LONGER, COST LESS! If you want to know more, let me have one of our sales engineers call on you.

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MANUFACTURERS OF A COMPLETE RANGE OF STANDARD AND SPECIAL DRILLS IN ALL POPULAR SIZES, LENGTHS AND TYPES

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CF&I Springs are the result of many years of design skill and manufacturing experience. From a virtually unlimited variety of sizes and shapes, CF&I can provide the right spring for almost any application. If your requirements are unusual, CF&I's new Spring Design and Development Department will be glad to work with you in designing special springs or formed wires.

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Denver • Oakland • New York
Sales Offices in All Key Cities

CF&I STEEL MADE IN U.S.A.

8200

For More Facts Write No. 311 on Information Card—Page 32

3 reasons why General Electric Slimline is America's most popular 8-foot fluorescent

Any time you see a long, unbroken line of fluorescent light, chances are good it's a General Electric Slimline lamp. Over the years, the G-E Slimline has proved . . .

1. *You can cut parts maintenance almost in half.* A G-E Slimline system has about half as many parts as a standard 40-watt system, yet it produces the same amount of light.

2. *You get 5% higher efficiency* from General Electric Slimline lamps than from standard 40-watt fluorescents. You get more light for every dollar of electricity.

3. *You can make your place look better.* Slimlines start instantly, with no blinking. They have an excellent record of uniformity and long life because of General Electric's outstanding quality controls and manufacturing experience. Available in all popular colors.

There are 14 combinations of tube length and diameter to fit your space requirements. Specify General Electric on your next order for slimline lamps. General Electric Co., Large Lamp Dept. C-13, Nela Park, Cleveland 12, Ohio.

Progress Is Our Most Important Product

GENERAL ELECTRIC



The nearsighted MISTER MAGOO says . . . "1945? Who could forget that year? Eagle-eye Magoo was mustered out of the Aircraft-Spotting Command, and General Electric invented the slimline lamp. Happy birthday, Slimline! Zounds —they don't make these telescopes like they used to!"

For More Facts Write No. 312 on Information Card—Page 32

Most efficient, most economical way
to line drums, cartons, cans, pails

GER-PAK
POLYETHYLENE
LINERS IN ROLLS

SAVE WORK!
Just slip GER-PAK Liners onto any holder above work area. No handling problem!



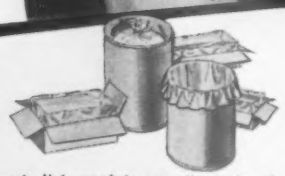
SAVE TIME!
Pull Liner down over mandril. Then zip off quickly, cleanly at perforation!



SAVE FUSS!
No smoothing-out by hand! Insert mandril and Liner into container, "cuff" around top, remove mandril!



For drums
For cartons
For cans, pails



- Quality-made to seal out dirt, moisture, all contamination!
- Chemically inert to protect containers!
- Up to 120 inches in width; no limit to length!
- Available gusseted and non-gusseted!
- Tie-off or peel-over construction!
- LEAKPROOF DOUBLE SEAL optional upon request!

Write Dept. PM-4 for samples
the short way to say superior polyethylene sheeting

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GERING PLASTICS, division of STUDEBAKER-PACKARD CORP.,
Kenilworth, N.J.

For More Facts Write No. 313 on Information Card—Page 32

What Are They Paying in Purchasing?

(*Continued from page 71*)

from company to company. But figures and comments from the purchasing executive of a growing, and progessive diversified company in the Middle West give a fair idea of national trends. Asked for an estimate of salaries for ten different purchasing positions in his geographical area, he gave these:

Stenographer—(above a clerk typist and below a secretary)—$1.62 to $2.03 an hour.

File Clerk—$1.29 to $1.62 an hour.

Clerk Typist and Clerk, Junior—$1.45 to $1.81 an hour.

Clerk, General—$1.62 to $2.03 an hour.

Clerk, Intermediate—$1.81 to $2.28 an hour.

Clerk, Senior—(equal to Executive Secretary)—$2.03 to $2.56 an hour.

Expediter (Female)—Depending on how much importance is attached to the job, and how much responsibility goes with it, $1.29 to $2.03 an hour.

Expediter (Male)—$2.03 to $2.56 an hour. "In this day of cutting costs there is a real trend to letting each buyer expedite his own orders," says this purchasing agent. "If he has to spend a lot of time expediting you can bet he'll start doing a better job of buying. This also eliminates a lot of 'routine' expediting."

Invoice Auditor and Purchasing Department Supervisor (Female)—Again, the importance of the job governs. Pay could be the same as that of a Clerk, Intermediate, or even Clerk, Senior. "Most companies doing their own invoice matching," according to the purchasing agent, "can fill this job at $1.62 to $2.03 an hour."

Commodity Buyers:

Beginner and Junior Buyer—$430 to $580 a month.

Trained Buyer—$500 to $680 a month.

Buyer with Supervisory Duties—$580 to $790 a month.

Assistant Purchasing Agent—$7,500 to $12,000 a year.

Purchasing Agent—$9,000 to $15,000 a year.

Director of Purchases—$10,000 and up.

The recent recession has indirectly benefited purchasing by separating the managers from the clerks, in the opinion of one veteran P.A. Waning sales have caused management to take a good look at the sources of profit in their buying operations. Alert, aggressive P.A.'s have at long last had an opportunity to show what contribution purchasing can make to profits—and at the same time to prove their own worth.

The situation was summed up by one of the leaders in purchasing education as follows:

"Let's face it, too many of the members of our profession are nothing but clerks. And they will remain clerks, as long as they fail to realize that today's business world is constantly changing and that the man who is going to become an executive, in purchasing or any other management job, is the man who is willing to continue to work and study and grow with his profession and his business."

► END



He's carrying a day's supply of towels for a plant of 500



Steiner Company American Automatic paper towel dispenser. Holds roll of 500 towels.

When a maintenance man can carry a whole day's supply of towels under one arm, it proves two things. One, you cut towel costs because it doesn't take many roll towels to supply the needs of a plant of 500 employees. Two, maintenance costs are reduced because keeping washrooms supplied with towels takes little time. Steiner Company controlled towel dispensers assure you of these advantages. With these cabinets you determine the rate at which towels are dispensed . . . the best rate to keep washroom traffic moving and to keep employees or customers satisfied with service. For details contact . . .

STEINER

STEINER COMPANY

Dept. 60-3, 740 Rush Street, Chicago 11, Illinois

For More Facts Write No. 314 on Information Card—Page 32

Employment Service

Experience: Fifteen years in purchasing capacities with large automotive manufacturing corporation. Presently P. A. in divisional plant. Specializing in production buying.
Education: B.A. liberal arts. Additional bus. school training.
Will relocate: Prefer Midwest.
Write: Box 390

Experience: Three years diversified experience in purchasing materials, i.e. metals, plastic raw materials, packaging, and industrial plant materials. Desire position as purchasing agent or assistant with bright future.
Education: B.A. economics & accounting, M.B.A. industrial management—courses in purchasing materials handling, product design, and inventory control, and many others.
Will relocate, but prefer New York City area, L.I.C. and Long Island.
Write: Box 397

Experience: Ten years experience, purchasing department eastern electronics manufacturer. Expediter, buyer, systems and procedures, and administration. Director of purchases, supervising personnel of department. Negotiated sub-contracts and long term supply contracts. Reported directly to management on purchasing activities and recommended "make or buy" desirability.
Education: Special courses, bus. adm.
Will relocate.
Write: Box 400

Experience: Five years experience procuring special reactor components and nuclear fuels for AEC prime contractor. Responsible also for negotiation and administration of R&D subcontracts. Five additional years of high level staff administrative responsibilities. Have "Q" clearance.
Education: B.S. bus. adm.—3 years civil eng'rg. Graduate courses in purchasing and commerce.
Will relocate.
Write Box 405

Experience: Five years assistant P.A. with medium-sized hardgoods manufacturer. Good knowledge of expediting, perpetual inventory, packaging materials, printing, office supplies, factory machinery and tools. Excellent on follow-up and scheduling. Proven cost reduction techniques.
Education: Three years Brown University.
Will relocate. Anywhere
Write: Box 401

Experience: Twenty years in purchasing-responsible for buying wide variety of components and materials for multi-plant operation. Practical and working knowledge of value analysis, purchasing training and procedures, inventory control, and government contracts.
Education: AB in economics and bus. adm.
Will relocate.
Write: Box 399

Experience: Nine years in Electro-Mechanical field. Purchases include electronic components, screw machine parts, castings, forgings, stampings and all phases of raw materials. Familiar with Govt. Specs. Able to assume complete charge of small purchasing department.
Education: Courses in electronic theory, accounting and blueprint reading.
Will relocate.
Write: Box 391

Experience: Ten years in procurement field with air frame and missile manufacturer. Assistant P.A. for five years. Completely familiar with all types of contracts, working with A.S.P.R. and A.F.P.I. Initiated highly successful value analysis program. Complete resume on request. Age 37. Married, two children.
Education: Two years college, two years college equivalent, technical schooling, management training, quality analysis and procurement courses.
Will relocate. South or southwest preferably.
Write: Box 395

HOW TO APPLY

Listings in this department are offered without charge. Both purchasing department personnel interested in changing jobs and employers in search of replacement or additions to their departments may take advantage of this service. When writing, specify whether you want the applicant's form or the employer's form. Address all correspondence — whether for forms, or in answer to an employment advertisement, to: Box No. Employment Service Department, Purchasing Magazine, 205 East 42nd Street, New York.

Experience: Assistant P.A. (2 years) multiple buyer organization. Multi-million special governmental agency. Current areas of procurement; engineering supplies, equipment, and bulk chemicals. Formal contracts and bid system utilized. Presently researching in specification determination, value analysis, and cost control.
Education: BBA, industrial production management top university, professional seminars. Member N.A.P.A. and Society for Advancement of Management.
Will relocate. Foreign countries considered with top Co.
Write: Box 393

Experience: Recently discharged from U.S. Navy—served in submarine branch. Two months in purchasing dept. of automotive parts manufacturer. Available as a result of cutback in labor force. Desire to attend night school and work for a degree in bus. adm. Seek trainee opportunity with aggressive corporation. Age 24.
Education: H.S. grad., Navy electronics school, night school courses in drafting.
Will relocate. Now residing in Mich. but will relocate.
Write: Box 396

Experience: Twenty-two years' intensive and diversified procurement experience. Presently unemployed, wide and varied experience in research and standardization, buying raw materials, parts, metals, electrical and electronic components, instruments, castings, chemicals, sub contracting, office and plant supplies, packaging material, administration and supervision.
Education: Four years high school—Aviation Airplane Engine Mechanic School—U.S. Air Force (World War Two).
Write: Box 394

Experience: Thirteen years in electronic tube and component distributing business; buying, expediting, costing, pricing, sales desk, gov't contracts. Operated inventory and stock control, Visi-record and Cardex systems. All general office routine and administration. Prior to this a year and a half in automotive parts. stock and counter sales. Five and half years RCAF radio operator and administration.
Education: Business college night school, lecture course in distributive education home study in "employee relations in industry", administration, accounting. Continuing education.
Will relocate. Prefer Calif.
Write: Box 406



No divided responsibility on service between points served by DC

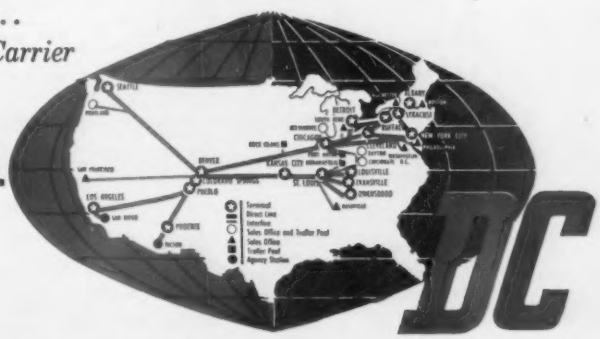
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D-C is responsible for your shipment from pick-up to delivery, coast-to-coast or to a nearby city. Safe arrival is assured by experienced personnel and the latest in equipment and facilities ALL THE WAY!

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the ONLY direct coast-to-coast carrier!



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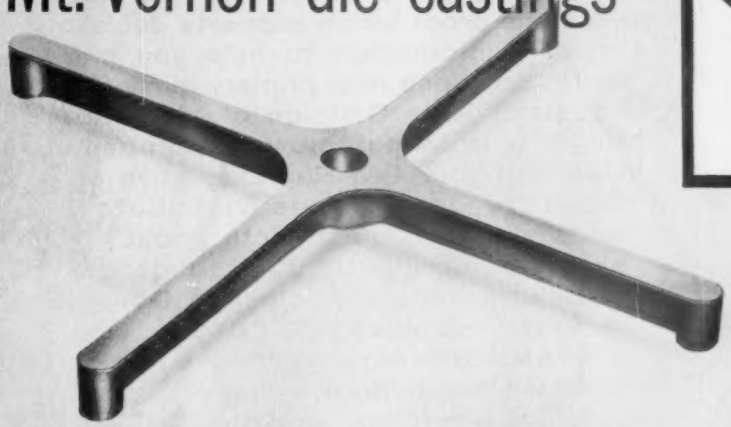
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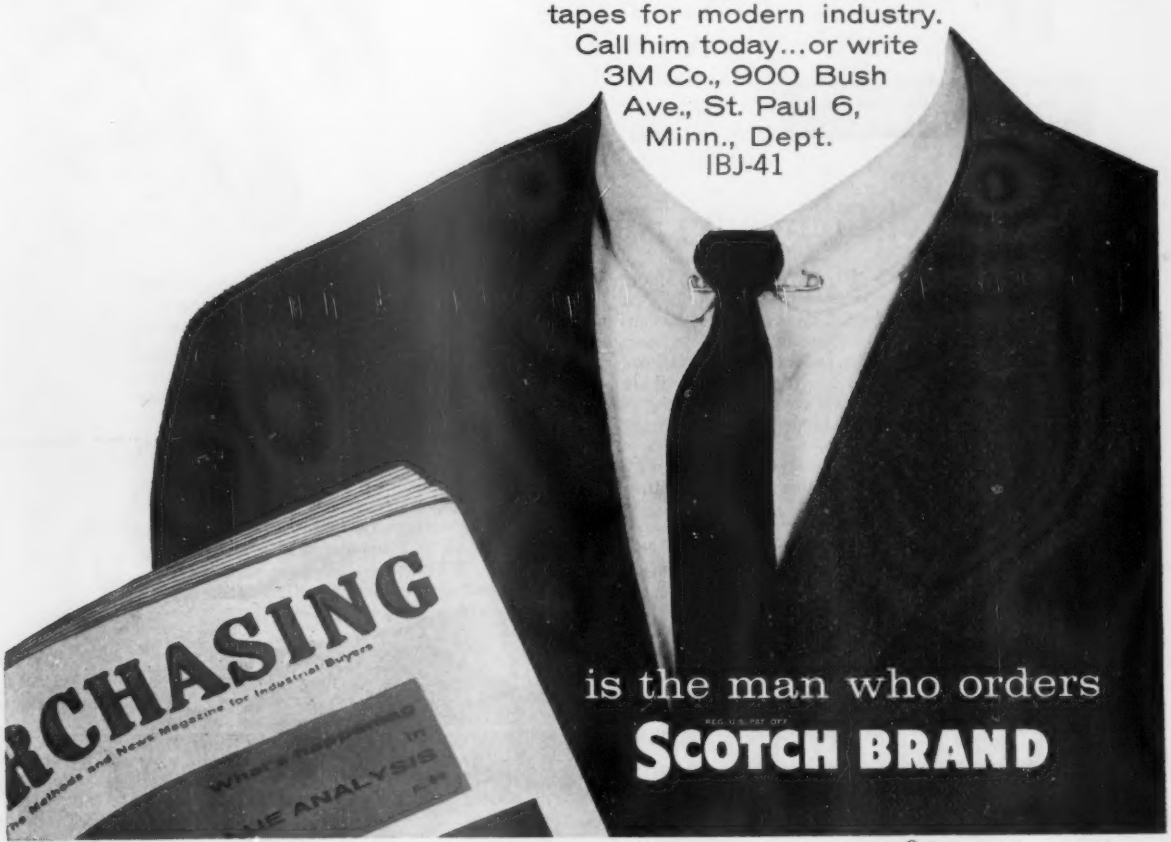
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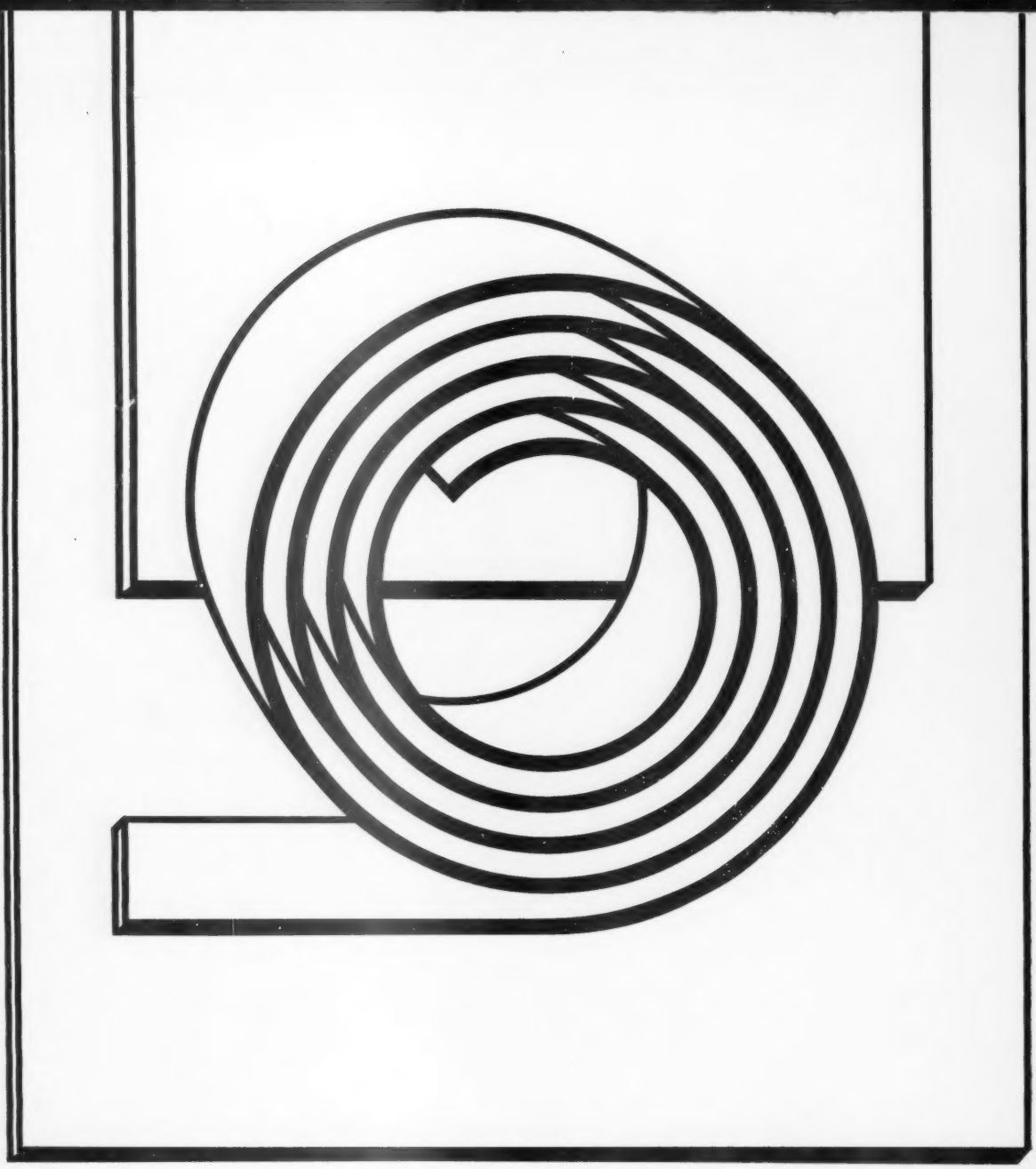
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